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## NEWS IN BRIEF

### Times talks hit snag

TALKS AT The Times between management and some Natsopa chapels have been held up by disagreement over the formula arranged by Employment Secretary Albert Booth (CW, March 15). Four Natsopa members who were sacked before their notice ran out and are not covered by the formula have been presenting a stumbling block.

Chances look good, however, that a solution will be found. All the rank and file of the other unions have agreed to the Booth formula.

### RAC system

THE RAC has commissioned Systemic, of Sunbury-on-Thames, to develop software for processing membership subscriptions. In addition to handling general administration, the new system will enable RAC patrolmen to verify over the phone that a motorist with a breakdown is an RAC member.

### Conference

FROM Facsimile to Electronic Mail is the title of ISL's conference next Tuesday and Wednesday at the Regent Centre Hotel, Carburton Street, London. Speakers will include Howard Anderson of the Yankee Group, Harry Belsey, of British Petroleum Communications Division, and Claire Messier from DEC in the US.

### Glasgow office

A DOUBLING of Scottish business over the last year has led SIA to open a new sales and support office in Glasgow. SIA has had a node in Glasgow since 1976 but customers were previously supported from the Scottish headquarters office in Edinburgh.

### Micro support

MICROPOWER is to get full marketing and distribution support from Zilog (UK) for the M2Z series microcomputers from the beginning of April.

# COMPUTER WEEKLY

## GEC director calls for changes in education system to cope with micros

A CALL for a major change in our educational system so that the country can benefit from the many advantages that microelectronics and the micro-processor offer, was made last week by Dr Robert Clayton, GEC technical director and chairman of GEC-Fairchild.

The call was made during the Council of Engineering Institutions' Graham Clarke lecture, which Clayton was giving. Highlighting the fundamental differences between the UK and US in the development and exploitation of microelectronics, he said that this country had to learn how to produce people of

the calibre of Robert Noyce and Gordon Moore of Intel, Wilf Corrigan of Fairchild, and Pat Haggerty of Texas Instruments.

"These people have a blend of various qualities", he said. "They all have scientific and research backgrounds, on to which has been overlaid entrepreneurial flair and management expertise."

"Can our education system do it?" he asked.

He stressed that he felt the lack of innovation in the UK was a major concern, and that the education system should change to help rectify the situation.

The US government acts as an

important customer to manufacturers, and Clayton feels that this should occur much more often in the UK. He regards it as a much better way of "funding" the development of an industry and its products than the direct financial support given by the UK government.

"The cost of money is going up alarmingly", he said, "and implicit in the funding is a large amount of funding from the companies involved. For example, the £70 million for the microelectronics industry is planned to realise a total investment of over £200 million, with the rest coming from industry".



CLAYTON... "lack of innovation in the UK a major concern."

### DES 'gets it right' on micros

THE Department of Education has "got it right" in its proposals on micro education (CW, March 15) according to Charles Sweeten, secretary of Micro-computer Users in Secondary Education.

But in expressing his association's approval of the DES' plans, Sweeten added, "It is very, very important that we get the next six months right."

They should not sit back now and assume everything was all right, Sweeten warned. Several important areas were being held up at the moment, such as the needs of special education, handicapped and remedial, and exchange of information between schools, he said, adding that teachers' tasks were growing rapidly now that, without further resources, "soon we will not be able to cope."

The "most exciting" feature of the Department's plan was in Sweeten's view, the idea of an advisory centre. "This could put everything together," he said.

### In-house service

GSI UK has formally launched its in-house mainframe service (CW, March 8), under the name Local Computing Service. As expected it will be based on Digital Equipment 2020 machines and GSI has rewritten a lot of its existing financial and accounting packages to run on the 2020.

## Shadow favourite in IBM user survey



### Scicon man made FRS

IN recognition of his contribution to statistics and mathematical programming, Professor Martin Beale has been elected Fellow of the Royal Society. Professor Beale is a technical director of Scicon Consultancy International and Scicon Computer Services.

A Fellow of both the British Computer Society and the Institute of Statisticians, Professor Beale is also a member of the International Statistical Institute. From 1974 to 1976 he was chairman of the Mathematical Programming Society, and currently holds the position of vice-president of the Royal Statistical Society.

Professor Beale has published several papers on the theory and application of statistics and methods of optimisation, and in 1968 his book "Mathematical Programming in Practice" was published by Pitman. Since 1967 he has held the appointment of visiting professor in the mathematics department at Imperial College, London.

FOLLOWING its acclamation by US users - who placed it joint first among IBM-compatible TP monitors in the Datapro 1978 Software Honour Roll (CW, January 4) - Altergo's Shadow II has again been rated top of the list by users, this time in a UK poll.

Conducted by the IBM Computer Users Association, the survey shows that two TP monitors - Shadow II and Thirst - are way ahead of the field in the eyes of users, who were asked to rate each package on a scale from 1 to 5.

Both Shadow and Thirst - the high-throughput system developed by Brown's Operating System Services - scored close to the maximum in user satisfaction at 4.8. Nearest competitor was Cincom's Enviro/1, at 4.0, with CICS rated at 3.8.

Vestlinghouse's Westl, which came joint top with Shadow in the Datapro survey, was rated by only one CUA user; this

means that no rating appears in the survey, which preserves confidentiality by printing scores only where more than five users responded.

The CUA survey, conducted last year, attracted responses from nearly all the association's 300+ GSD users. In addition to TP monitors, it covers 16 other categories of system software - in all, some 210 packages - and another seven categories of application software, comprising some 87 packages.

All installations completing the questionnaire are listed in full, together with their configuration, and are cross-referenced to the package ratings. This means that a potential package purchaser has access to a comprehensive user list, as well as an indication of average satisfaction with the software.

Where five or fewer users exist, the authors suggest contacting the installations directly

to obtain an opinion.

In addition to being of real benefit to prospective purchasers, the survey - priced at £3 and available to CUA members only - makes revealing reading for anyone interested in 380/370 software.

In the area of information retrieval, for example, it shows that the Westinghouse package Quikjob is the most highly regarded, with a score of 4.9. Closest competitors are Pan-sophic's Easytrieve and Computer Associates' CA-Earl, each of which was rated at 4.2.

In common with the Datapro poll, some of the highest scores were achieved by relatively simple utility software, such as sorts. Two popular sorts, CA-Sort and Syncsort, were here placed equal at 4.8, though the survey shows that users of IBM's sort software still outnumber all others by about 2½ to 1.

### Lowndes-Ajax goes Dutch

NEARLY two years after announcing its intention of acquiring a bureau on the Continent (CW, May 8, 1977) Lowndes-Ajax has taken a 30% interest in the Dutch data preparation bureau, IVA, with the intention of ultimately taking a controlling share.

Later this year IVA's Amsterdam office will be linked online to the Lowndes-Ajax IBM 370/158 and 370/155 machines at

Croydon via a lease line enabling L-A to offer Dutch users its accounting services and its Sim-plan corporate management package via batch and interactive terminals. L-A will also offer the System 2000 database management system from MRL.

IVA employs 50 people, has a turnover of about £500,000 a year and runs key-to-disc installations in Amsterdam and Rotterdam.

### Council strikers go back

STRIKING social workers at Southwark Council, who delayed the installation of an ICL 2870 at the computer centre there, returned to work this week following a local agreement on the application of a national pay deal that would give them about 9% more. On

strike for seven months, the social workers, who are members of the National and Local Government Officers Association, have forced the council to run up a bill of about £100,000 leasing computer time from various organisations, including ICL at Bracknell.



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## Briefing

### Prestel goes public

PRESTEL became a public service for domestic users in London this week because there is extra access capacity on the Prestel computer in the evenings and at weekends, which the Post Office wants to use to expand the service as fast as the supply of terminals will allow.

Birmingham, Manchester and Edinburgh are scheduled to follow in the autumn when problems of linking Prestel databases have been resolved, although anyone who had a terminal anywhere in the country could access the London centre with the penalty of higher telephone charges. Business users should be allowed on at about the same time.

### One-day strike

DISMISSING the government's latest pay offer of 7% this year and more in 1980 as "ridiculous and miserable", all nine Civil Service unions are to stage a total one-day stoppage next Monday, followed by increased selective strikes (CW, March 15). A union spokesman said the offer was not a basis for further negotiation but the Civil Service Department said it was the opening offer and that despite strike threats it was "ready to continue with the talks."

### Laser print centre

ICL has opened a laser printing centre at its Feltham, Middlesex, facility to demonstrate the LPS 14 high speed printer to prospective customers. Built in West Germany by Siemens, the LPS 14 runs at up to 21,000 lpm. The system at Feltham will be run by Baric which will also offer a printing bureau service on it.

### TI denial

SPECULATION in the UK memory marketplace this week that Texas Instruments was planning to withdraw its 64K bit RAM from sale has been squashed by the company. A spokesman for TI in Dallas said the part was now in production, and had made the transfer from the development stage a month ahead of schedule.

### Indian plant

THE Indian government is to establish a semiconductor plant at Chandigarh, north of Delhi. General US companies, including Mos Technology, Motorola and AML, had been asked to produce memory chips and to produce microprocessors, such as the Intel 8080, for the Indian market.

### Wickin jailed

CONSULTANT Stanley Wickin, 40, pleaded guilty to stealing £100,000 from a California computer company (CW, March 8) and was sentenced to four years' imprisonment. The court heard that Wickin had been ordered to return the money to the company in order to secure police clearance for a down in computer



Maisonneuve... "supply me with information."

## Clash of the mainframers

ARCH enemies in the mainframe market, Gene Amdahl, founder of the Amdahl Corp., and Jacques Maisonneuve, chairman of IBM's World Trade Corp., crossed swords in public last week, after Amdahl had described IBM's marketing techniques as FUD - Fear, Uncertainty and Doubt.

The clash occurred at the London conference, Tomorrow In World Electronics, organised by the Financial Times (report, Page 11).

Amdahl pulled no punches in his paper about the challenge to IBM from plug compatible CPU suppliers, such as his own company, and illustrated his point about FUD by asserting that IBM was

implementing some of its systems in microcode mainly to make IBM users believe that microcode would be used more and more in the future.

Amdahl said that microcode slowed down a machine and that it was only worth microcoding the most frequently used parts of systems software.

During question time at the end of Amdahl's paper, Maisonneuve stood up and said that Amdahl should know as an ex-IBM employee that IBM never used what Amdahl described as FUD, adding, "Let me know if you ever find any cases of FUD. Supply me with information."

Amdahl retorted, "We have been supplying that information to you regularly."



Amdahl... "fear, uncertainty and doubt."

## DEC-Hoskyns end-user deal

By Peter Hewitt

IN a significant departure designed to boost its end-user business, Digital Equipment Corp has signed a joint marketing agreement with Hoskyns covering an extensive range of commercial application packages for the PDP-11. The agreement is worldwide, but will be applied first in the UK.

Under the terms of the agreement, both DEC and Hoskyns will sell and support packages from the Mas-M range that Hoskyns developed last year from its highly successful mainframe product, Modular Applications Systems (Software File, November 30, 1978).

These have now been adapted to run in conjunction with system software including the RSTS operating system, the RMS file handler, and the Data-retrieve report writer. All are or

threatening by many of DEC's established OEM customers, the agreement has been accompanied by a move to placate its largest OEM, Gamma, which has been promoted to "major account" status.

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These have now been adapted to run in conjunction with system software including the RSTS operating system, the RMS file handler, and the Data-retrieve report writer. All are or

### National fund for polys call

THE government should set up a National Computer Committee for Polytechnics and Colleges which would finance all computing facilities in these institutions. That is the main recommendation of two reports produced by the Association of Computer Units in Colleges of Further Education.

ACUCHE's two-year study was aimed at producing a realistic plan for non-university computing.

### Amdahl executives sell stock

SEVERAL Amdahl Corp executives, including the president of the company, John Lewis, have sold large amounts of stock that they held in the firm. The sales were all of unregistered stock that could be sold after being held for two years. John Lewis sold 31,900 of his 42,000 unregistered shares.

## Lloyds plan to 'sell off' leased 370s in US

FACED with massive claims from US leasing companies under its residual value insurance policies, Lloyds of London is to get US computer broker, Comdisco, to sell off all the IBM 370 machines in the US covered by the policies. A Boston bank is expected to act as the loss adjuster.

Up to 800 machines with an original value of about \$1,000 million, are involved, and the signs are that the lessor-concerned by the fully-compensated. They will have to take some "write-down" on the machines, thereby sharing the loss with Lloyds. But they will be relieved of having to try to find new lessees for the machines, the normally required under the policies.

Meanwhile, the massive payout to US leasing companies by Lloyds has begun with \$10,000 a day being paid to the leasing companies. The court heard that Wickin had been ordered to return the money to the company in order to secure police clearance for a down in computer

Dick Lussier told Computer Weekly in New York that a new lease had been written for the machine, but that the value of the lease was \$10,000 a month less than the assigned value and Lloyds had agreed to pay up. Lloyds will pay for \$10,000 a month for the next year and the machine is written off.

According to Lussier, claims are being made for about \$100 million.

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## COMPUTER WEEKLY

Vol. 26 No. 648  
Thursday, March 29, 1979Editor  
Gareth Jones 01-261 8033  
Deputy Editor  
Tony Higgins 01-261 8696  
Advertisement Manager  
Harry Hutson 01-261 8359  
01-261 8503Class Ad Manager  
Brian Durrant 01-261 8597IPC Electrical Electronic Press Ltd,  
Donner House, Stamford Street,  
London, SE1 1JL  
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Telex: 26117 BIPRIS GBranch Offices:  
Birmingham: 202 Lyndon House, Walsall  
Road, Walsall, Staffs. B47 7JH  
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Salford, Manchester M3 2JZ  
Telephone: 061 872 4211New York: 205 East 42nd Street, New York,  
NY 10017  
Tel: (212) 867 2080 Telex: 421170

Published weekly on Thursday

Registered at the Post Office as a  
newspaper. Price per copy 11p

IPC Business Press Ltd 1979

Members of Computer Weekly staff  
may be contacted directly on the  
extension listed below. Other  
departments in Quarter House may be  
contacted by dialling (01) 261 8000.

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Computer Weekly has a circulation each  
week of over 82,000 including the high-  
light fully requested circulation in the UK.  
The international edition, which is  
published 10 times a year has a circula-  
tion of over 84,000.Computer Weekly is sent free of charge to the  
following categories in the UK and the only  
company directors, company secretaries,  
company executives, and company  
managers responsible for computing,  
management computer systems, and  
systems analysis/DBA officers, programmers,  
operators, computer salesman, field engineers.Controlled Circulation Department: IPC Business  
Press (Sales & Distribution) Ltd, 48  
Bentley Street, London EC1R 3NE. Tel:  
01 427 3000. Subscriptions for readers outside  
the above categories: See page 114, 115,  
overseas £20, USA, Canada \$35, elsewhere £2-30,  
overseas £10, USA, Canada \$35, elsewhere £10 on  
request.Subscriptions: IPC Business Press (Sales & Distribution)  
Ltd, 48 Bentley Street, London EC1R 3NE. Tel:  
01 427 3000.Back numbers can be had as available for 40p  
post free.

ISSN 0010-478

## COMPUTERVIEW

THE welcome resumption of  
talks at The Times still has  
hanging over it the shadow of  
the apparently intractable dead-  
lock between management and  
the National Graphical Associa-  
tion over direct input by jour-  
nalists.The NGA, understandably, is  
still saying it is opposed to the  
taking over by others of any of  
its members' work. At the same  
time, it is crystal clear to those  
involved in the technology that  
direct input will come sooner or  
later, and as surely as day follows  
night, and as it has already done  
in the US.The fear has been that the  
British Press will tear itself apart  
in the battles over the change.There are signs now, however,  
that the NGA is beginning to see  
the writing on the wall. While  
not conceding anything, union  
officials openly point to the  
clause dealing with new technol-  
ogy in the "Booth formula"  
which the Employment Secre-  
tary drew up. This states that  
one of the matters for negotia-  
tion will be "application of new  
technology in accordance with a  
timetable to be agreed and with  
arrangements for future joint  
reviews."While this does not mention  
direct input, it seems likely that  
a formula will be reached similar  
to that at Express Newspapers,  
where the NGA is given juris-  
diction over all keyboarding for  
a fixed period of five years, after  
which there will be a joint  
review. Express management was  
happy to concede this be-cause direct input would be of  
considerably less value there  
than at The Times, owing to the  
different styles of the papers.An arrangement such as this  
may seem to be putting off the  
day of reckoning, but it is prob-  
ably the only solution. It will  
also allow the painful effects of  
redundancies to be reduced, by  
spreading them out over a  
longer period.There is, of course, no  
guarantee that after five years  
or so the union will agree to  
direct input, but by that time the  
writing on the wall will surely be  
that much clearer.On the other hand, there may  
be more unemployment pro-  
duced by other new technology,  
prompting those with jobs to  
cling on to them even harder. All  
these things The Times man-  
agement must take into account.There are also signs that the  
Fleet Street unions are becom-Print union  
sees writing  
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be more unemployment pro-  
duced by other new technology,  
prompting those with jobs to  
cling on to them even harder. All  
these things The Times man-  
agement must take into account.There are also signs that the  
Fleet Street unions are becom-ing sensitive to the other issues  
involved, particularly the ap-  
palling state of labour relations in  
all national newspapers. This  
has been commented on many  
times, most recently by the Price  
Commission in its lengthy report  
on the Daily Telegraph's appli-  
cation to raise its cover price.This report made detailed  
recommendations to the Tele-  
graph about how to reduce costs,  
including the introduction of  
new technology, and affirming  
the value of direct input. This, of  
course, raises the question of  
what does the Price Commission  
know about how to run a new-  
spaper; but coming from a Lab-  
our government's agency it  
cannot help but have some  
effect on union thinking.As it is, union officials are  
showing themselves quite  
agreeable to the idea of disputes  
procedures and agreements that  
production will not be disrupted  
several times a night. In their  
own defence, they point out that

## FOCUS

A user's basic guide to  
international conferencesNOT so long ago, it was the  
accepted industry mode to  
structure exhibitions with con-  
ferences attached. No self-  
respecting exhibition was com-  
plete without an associated  
seminar or full-scale conference.As a means of attracting the  
more serious-minded DP pro-  
fessional to the event, the ploy  
worked. The DP manager could  
more easily justify his presence  
— or perhaps absence from  
work — in favour of an event  
featuring a distinguished  
gathering of speakers. Now it  
seems, the conference takes  
precedence over the exhibition.  
Only truly major exhibitions  
now escape incorporating a  
panel of industry speakers.For the visitor to such events,  
problems abound. Should they  
linger with the equipment and  
relax with the sales teams, or  
attend a stimulating talk on the  
joys of text processing by an  
eminent consultant from Lang-  
ton Information?Conferences, with or without  
adjacent exhibitions, now come  
international-sized. This month,  
Infotech is staging an ambitious  
program with the theme "The  
European Computing Review".Subjects under review are pre-  
dictably erudite and include  
such masterpieces as public key  
cryptosystems, psychology,  
ergonomics and the man/  
computer interface, and the  
challenge of the Third World.Keeping to international af-  
fairs, the Financial Times called  
last week's conference "Tomor-  
row in World Electronics". As to  
be expected, there was a full  
quota of global views, revolu-  
tions, impacts and challenge in  
the related themes. Whether,  
however, IBM chairman of the  
board, Jacques Maisonrouge, in  
his "Computer and Society"  
talk, welcomed the presence of  
fellow speaker Gene Amdahl,  
was not revealed.Not to be outdone in the  
status stakes, Online is holding  
an international conference  
next month on "New Concepts  
in Business Information".Just who attends these  
conferences could well be a sub-  
ject of more interest than the  
actual proceedings. Few DP  
managers have the time — or  
funds — to attend. They are too  
occupied coping with yester-  
day's snags today. Next week's  
problems will have to wait their  
turn. Similarly, the operations  
team have their data hands full.Only systems people and pro-  
grammers have the opportunitythe existing arrangements were  
all agreed to by management;  
but that was, of course, in the  
days when newspapers were  
owned by men who were more  
interested in political power  
than money, and would there-  
fore agree to anything just to get  
the next day's issue out.The chairman of the last  
Royal Commission on the Press,  
Lord McGregor, warned  
recently about the danger to  
Press freedom from a state  
takeover of The Times. He  
pointed to the movements in  
many other countries to estab-  
lish a "new world information  
order" by imposing government  
control over the sources and  
carriers of information. This was  
justified as an attempt to pro-  
mote "national identity", "cul-  
tural integrity", and "political  
cohesiveness", especially in de-  
veloping countries.An agreement at The Times  
which will ensure both its  
viability and its continued  
editorial independence from  
government, business, and  
unions will constitute a welcome  
bastion against these threats to  
our freedom of thought.

## DEC-Hoskyns deal

From Front Page

initially restricted to the UK, it is  
particularly significant that  
DEC has chosen a partner with  
strong US connections in the  
form of Hoskyns' parent com-  
pany, Martin Marietta.Meanwhile, to mollify its  
biggest OEM customer any-  
where in the world, Gamma  
Associates, DEC has signed an  
agreement with Gamma award-  
ing the Nottingham-based  
group major account status.Under the agreement DEC  
will set up a major account teamTen  
years  
ago...COMPUTER WEEKLY  
MARCH 27, 1969DELIVERIES OF ICL 1900s  
totalled 1,000 with the installation  
of systems in the UK, France,  
Poland and South Africa...  
The first computerised mail  
distribution system in Europe was  
scheduled for July 1969...  
... study on manpower and equip-  
ment, its first since 1964, was  
initiated by the Department of  
Employment and Productivity.Some 500 non-industrial  
points had been saved in the  
RAF, said the Minister of De-  
fence for Equipment in the  
Commons, as a result of com-  
puter control of equipment  
supply depots... The first com-  
puter science course at Royal  
University attracted 380 ap-  
plicants for the 30 places...  
... ICL estimated the value of  
1968 computer and peripheral  
shipments worldwide from the  
US at \$7,200 million... ICL  
formed a subsidiary, Royal  
Dataset, to handle supplies.

A project started in the late

The proposed online PAYE  
assessment and coding systems  
will complement the operations  
of the two computer centres  
that are currently taking over  
the routine collection of  
employers' PAYE remittances  
from local offices.The centres are at Cumber-  
nauld in Scotland, which  
handles PAYE collection for  
Scotland and the North of En-  
gland, and Shipley in Yorkshire,  
which covers the rest of En-  
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Wilkes

TERMINALS

VT100 Video Terminal

From £1195

LS120 DECwriter KSR Terminal

From £1625

Texas Instruments 745 KSR

30cps Silent 700 with Acoustic Coupler

From £1395

Texas Instruments

Portable 30cps with 20k Bubble Memory

From £2395

Teletype 43, 30cps Table Top Terminal

From £865

Hazeltime Video Terminals

From £550

Hazeltime Video with VT52 emulation

From £840

Pericom 6903 Video 132 col x 24 line screen

From £1289

Quine Sprint 5, 45cps daisywheel char printer

From £2150

ALL PRICES EXCLUDE V.A.T.

Wilkes Computing Ltd.

Buckingham Road, Boreham, Essex

Tel (0222) 290654 or 25971 Telex 449290

Inland Revenue's  
online PAYE plansONE of the biggest computer  
projects yet carried out in the  
UK is now under way at the  
Inland Revenue, which plans to  
implement online systems in  
each of its 14 regions to take  
over most of the PAYE work  
currently processed manually.ICL could receive substantial  
mainframe orders, if a cen-  
tralised approach is adopted and  
the government's single tender  
policy still applies when con-  
tracts are placed.The Inland Revenue is unable  
to say precisely how much the  
whole project will cost, but on  
the hardware side it has es-  
timated that the requirement  
just for VDUs in one of the big-  
ger regions would be about 1,400  
units, so that the total number  
eventually installed in all 540  
local tax offices around the  
country could come to a colossal  
10,000.

A project started in the late

Two centres

The proposed online PAYE  
assessment and coding systems  
will complement the operations  
of the two computer centres  
that are currently taking over  
the routine collection of  
employers' PAYE remittances  
from local offices.The centres are at Cumber-  
nauld in Scotland, which  
handles PAYE collection for  
Scotland and the North of En-  
gland, and Shipley in Yorkshire,  
which covers the rest of En-  
gland and Wales.The delays involved in the  
development of these systems  
were discussed in the last report  
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1960s to set up nine PAYE cen-  
tres was killed in 1971 by the  
Conservative government after  
it began toying with the idea of  
replacing PAYE with a tax credit  
scheme. But in 1977 the Inland  
Revenue set up a working party  
to look at PAYE computerisa-  
tion again, and a feasibility  
study was initiated early last  
year.The Inland Revenue is press-  
ing ahead with the project de-  
spite the forthcoming election,  
and a Revenue spokesman told  
Computer Weekly "We hope  
that the system design will be  
robust enough to cope, in time,  
with a different structure of  
personal tax. It will certainly be  
far more flexible than the batch  
systems proposed in the original  
PAYE scheme."The only one of the nine batch  
systems to go live was at East  
Kilbride in Scotland, and this  
centre now handles in batch  
mode the same sort of jobs that  
will be processed online by the  
proposed systems. The jobs in-  
clude PAYE assessment, coding,  
adjustment and repayments.At the end of next month the  
Inland Revenue hopes to submit  
a model system report to the  
Central Computer Agency de-  
tailing the data processing  
requirements for the proposed  
systems and listing the various  
options for handling them.One of the most crucial issues  
to be resolved is whether a cen-  
tralised mainframe approach  
should be adopted, or whether  
each tax office should be equip-  
ped with its own small system.The Inland Revenue spokes-  
man pointed out that the cen-Topexpress to market Tripos  
portable operating systemTRIPOS, the portable operating  
system developed at Cambridge  
University (CW, March 15) is  
also to be marketed by Topex-  
press, a Cambridge-based sci-  
entific and computer consultancy.  
Topexpress sees the software as  
well suited to single computer  
systems in addition to ring net-  
works and will be installing its  
Tripos system in May for an  
unmanned user.According to technical direc-  
tor Jack Lang, a particular  
strength of Tripos is its capacity  
for switching packets rapidly  
between small processes,  
making it ideal for transaction  
monitoring applications.The firm will also supply data  
handling hardware, but sees the  
current cost of the ports — around  
£1,000 — as a stumbling block.  
This obstacle should be removed  
next year with the availability of  
custom-built chip sets, possibly

for as little as £50.

No copyright attaches either  
to Tripos or to BCPL itself, both  
of which can be obtained  
directly from the Cambridge  
computing laboratory at  
relatively low cost (Software  
File, March 15). Because of this,  
companies marketing the soft-  
ware are basically selling exper-  
tise and support, the only pro-  
prietary content being such  
things as compilers and  
operating system extensions.

## ICL picks B7800s

WHAT is claimed to be one of  
the largest real time commercial  
networks in the UK, run by  
ICL's Pharmaceutical Division,  
is to be based on a dual Bur-  
roughs B7800. This £2.4 million  
order is the first in the UK for  
the biggest of the 800 series, and  
includes twin B7805 processors  
sharing 4.7 Mbytes of memory.

**RAF INSTITUTE OF AVIATION  
MEDICINE  
FARNBOROUGH, HANTS**

A mini/micro computer based system is required for on-line ex-  
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communicate directly with the laboratory's central computer facility to  
transfer of experimental data for further processing.

Applications for the operational requirement quoting CEH/51 should  
be made to:

Central Computer Agency  
Room 822, Riverwalk House  
Millbank, LONDON SW1P 4RT

Proposals must be received by 30 April, 1979.

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**MICROPROCESSOR CONSULTANTS**  
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ANNULLEN, DUBLIN 10

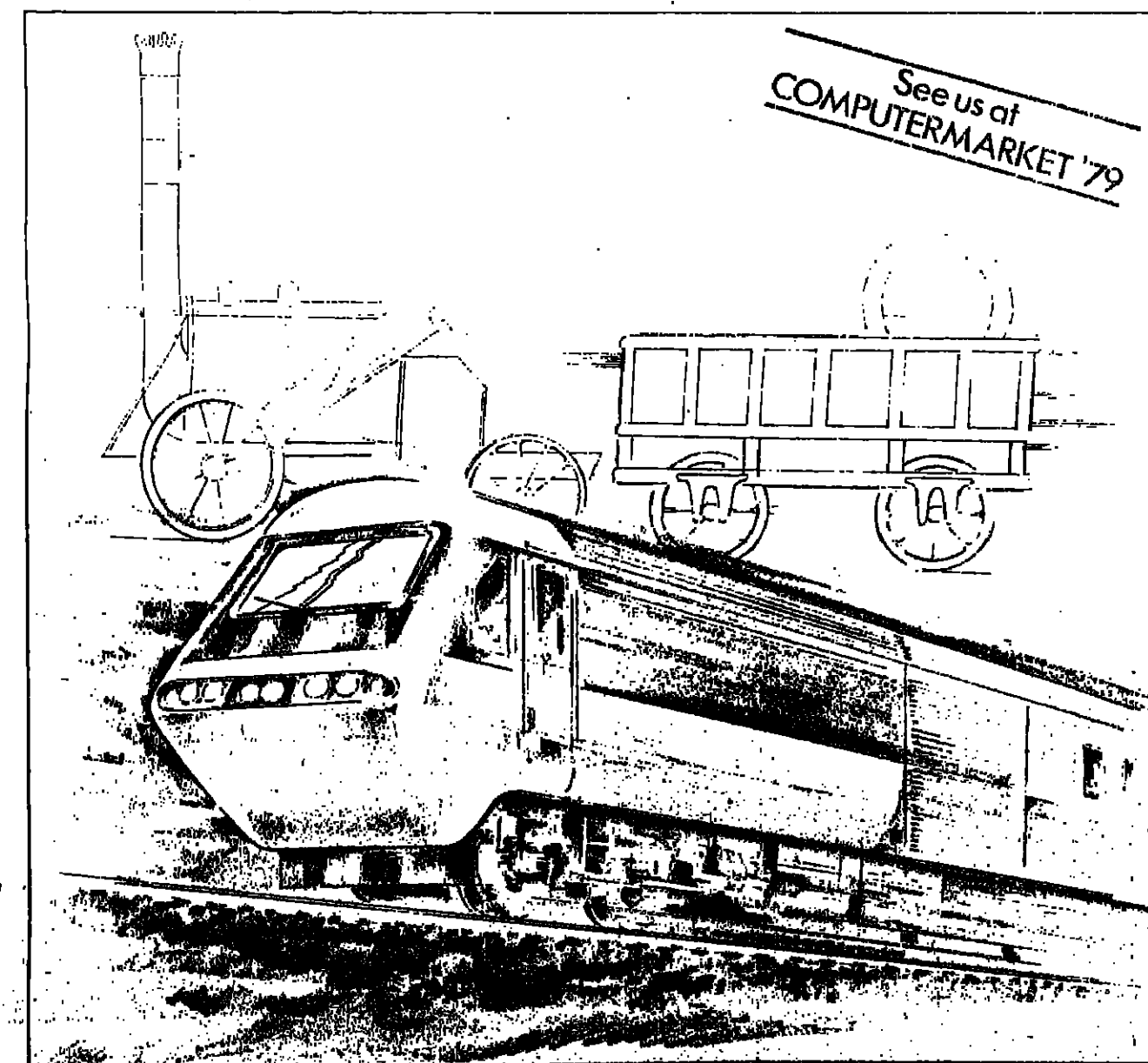
## Sanctions busting charges dropped

CHARGES of Rhodesian sanction  
busting, made earlier this year  
against Computer Resale  
Brokers, have been completely  
withdrawn by the Customs.  
Smaller charges against Barry  
Cross of CRB, and a former  
director of the company, Chad-  
wick Stolper, have also been  
dropped.The charges alleged that be-  
tween August, 1970, and De-cember, 1974, CRB supplied  
equipment to Rhodesia through  
intermediate firms in Europe.Cross told Computer Weekly,  
"The Customs had a query on our  
volume of exports. It could hap-  
pen to any company."Following a preliminary  
hearing early this month the case  
was put over to April 30 at West  
London Magistrates Court, but all  
charges were dropped at a

hearing on March 13.

Customs was not prepared to  
comment on why it had made the  
charges in the first place, or why  
it had dropped them.At one time CRB had a sub-  
sidiary in South Africa, but sold it  
about four years ago. In 1973  
CRB was taken over by Computer  
World Trade which is now con-  
trolled by International Aeradio  
Ltd (CW, March 8, 1978).Campus networks urged as way of  
unifying university computingDEVELOPMENT of campus  
networks — networks within  
universities — should be encour-  
aged as "an important unifying  
element in university com-  
puting" and should be funded by  
the Computer Board. That is one  
of the recommendations made in  
a summary of the activities of  
the Network Unit in the first  
issue of the IUCC Bulletin.In order to standardise these  
campus networks, both inter-  
nally and in their links to other  
computer systems via, for in-  
stance, the Post Office PSS, cen-  
tral co-ordination should be set  
up, said Mervyn Williams, head

of the recently wound-up unit.

He lists a range of other con-  
clusions that have come from  
the unit's two years of study, to  
do with standards, how the  
sharing of resources on inter-  
university networks should be  
managed, and how planning and  
costing should be organised.A distinguished collection of  
authors have contributed to this  
first issue of the Bulletin, which  
the Inter-University Committee  
on Computing aims to publish  
three times a year. Phillip  
Williams of UMIST, examines  
the potential of the Distributed  
Array Processor for informationretrieval, and Mike Pitteway of  
Brunel reviews a symposium on  
"Mathematical methods in com-  
puting graphics and design."Williams concludes that the  
DAP is not really suitable for  
information retrieval because  
what is needed is not high-speed  
processing but high-speed  
input/output.The IUCC Bulletin is edited  
at the University of Manchester  
Computer Centre. Subscriptions  
cost £10 a year, from Miss M. J.  
Day at the Computer  
Laboratory, Corn Exchange  
Street, Cambridge.

## Success breeds success

Success is hard to define. In our case it means that  
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the past year, that we have doubled our product  
range recently, and we now have the first of our  
new factories up and running.We're proud to be British and privately-owned.  
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technological achievement at home and overseas.Of course, you don't have to be as big as Her  
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Rail, British Steel, the CEB, or the Science  
Research Council to enjoy the benefits of a GEC  
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probably do for you.Call us and see. Our UK Sales Manager is on  
01-953



## H-P to build training centre

A TRAINING centre for its UK customers is to be built by Hewlett-Packard on a 26-acre site near Crowthorne, Berks. It will be completed in two-and-a-half years, according to H-P.

The plan is revealed in the annual report of Hewlett-Packard for its 1978 financial year ended October 31.

The company's turnover was more than £56 million, about 28% up on the previous year, and profits from trading before tax were £6.4 million, an increase of 20%.

Worldwide sales of H-P in fiscal 1978 were \$1.73 billion, 27% up on the previous year, while net profits saw a 26% increase to \$153 million.

Sales of computer systems accounted for 43% of total business.

### Ferranti office

FERRANTI has opened a computer system development office at Yateley, near Sandhurst, Berks, which will eventually employ about 90 people.

# Data General loses \$10m sales due to software incompatibility

POTENTIAL sales worth about \$10 million have been lost by Data General over the last six months because of the software incompatibility between its C/150 commercial system and the bigger C/350 and M/600 machines.

Data General's European product marketing specialist for Eclipse-based systems, Henri Aebischer, admitted that DG made a mistake limiting the main memory size on the C/150 to 256K bytes because it precluded the use of the Advanced

Operating System, AOS, on the C/150.

He told Computer Weekly, "We have lost a lot of customers to Hewlett-Packard over the last six months because H-P's Series 33 computers can support the same operating system as its bigger Series III machines, so the H-P machines have been far more attractive to bigger organisations, for example, who want to run the same software on different sized machines."

"We realise now that it was a mistake to equip the C/150 with

a power supply that could only support one 256K byte memory board and we have modified it so that the C/150 can have up to one Megabyte of memory, enough to run AOS."

"I estimate that we could have sold another 50 commercial machines worth about \$10 million if we had been able to support AOS on the C/150 when it was first introduced. But now the attitude of potential customers towards our Eclipse-based commercial systems

should change."

The one Megabyte memory and AOS support on the C/150 were announced earlier this month by DG as part of a group of hardware and software announcements relating to Eclipse-based systems (CW, March 22).

Data General introduced the C/150 last autumn (CW, October 3, 1978), about the same time that Hewlett-Packard launched the Series III (CW, October 19, 1978).

## Agency apologises to NHS

THE recruitment agency Computer People has apologised to the National Health Service and to Neville Vincent, computing services officer at St Thomas' Hospital, over an advertisement aimed at Health Service staff, which Vincent had claimed was unethical.

The agency agreed that the ad could have been taken to imply that working in the Health Service was unrewarding, although no such implication was intended.

Vincent had also claimed that the ad constituted "enticement" of staff. A. G. Lambie, marketing director of VLI Group, which owns Computer People, replied that any job ad was an encouragement to staff to leave their current employers.

Vincent has accepted the apology, adding that he regarded enticement as directing recruitment efforts at specific individuals with specialised knowledge.

## UK billings to overseas clients increase by over 50%

AN increase of more than 50% in billings to overseas clients is shown in the latest quarterly statistics from the Department of Industry on the UK computer services business.

The DoI figures go up to the third quarter of 1978 and show that total business by UK service companies increased about 25% from less than £67 million in

the third quarter of 1977 to nearly £84 million in the same period last year.

Billings to parent and associate companies, as opposed to outside clients, increased by about 17%, from £20 million to £23.5 million, while outside business rose about 30%, from £46.6 million to £60.5 million.

Overseas business increased markedly, but from a very low base, so that the record third quarter 1978 figure was still only just over £5 million. Consultancy services accounted for £2.1 million of this.

## Dymo Graphic Systems set for takeover

THE typesetting business of Dymo Graphic Systems looks set for a takeover by Itek Graphic Products, the Massachusetts maker of small composition systems. Dymo deals in large newspaper systems, and sells the Photon high-speed photocomposer.

Itek has introduced for its Quadritek range an interface unit to link directly with word processors. It is claimed to work with any communicating word processor which has a standard V24 interface. The code translation table can be modified by the operator from the keyboard. Links have been demonstrated with Jacquard, Wordplex, and Rank Xerox word processors.

Many-to-one translation can be carried out; for instance, space, hyphen, space on the typed document can be translated automatically to dash on the typesetter. Conversion which cannot be carried out automatically can be adjusted by hand on the typesetter's screen.

Quadriteks are intended for firms wishing to do their own typesetting in-house, rather than go to an outside printer.

## How we was my Valley

IF you need convincing that the inhabitants of the valley are a strange lot, look no further than Xerox's Research Centre.

On these glossy pages, conference rooms, every one sits on beanbag chairs, surrounded by plants of all nature, attired in knee-length jackets, pigmasks, and grey flannel suits, the corporation's gurus picture the future of mankind.

A few years ago, there were setting out the experimental Out system. Of the Future, and decided that the system that would be used in the future would be a private-enterprise which would be used in the future for the PDH-10, said to the point of "Please will you be so kind."

The powers that be, however, were horrified. "We're a manufacturer," they (remember XDS) "we buy a competing machine. Perhaps the 'You must use a Sigma'."

"Oh," said the boys. Much wailing and gnashing of teeth followed, and a month later they came with a computer that they knocked together out of old pieces. Close inspection revealed it to be an exact resemblance to a PDP-11 loaded Tenex and went on their way.

The machine is called and as far as I know is running. It is one of the on Argonne.

Plenty of perverted fun in the names of things. They had a software package for general use, called "General Algorithmic Technology" for short. When the bells and whistles were added, it became GATE. For extended. Then a new version was produced, and called "Can anyone figure this out?" It helps if you know from England, and many of the Americans' knowledge is often out of date, but reveal all next week.

**\$84.5m sale**

MODCOMP, the firm that was subject of takeover bid in February 22, has reported a financial year, ending 31.

## NEWS IN BRIEF

### French giants' US bureaux

FRENCH computer services giants, GSI and CISI, are both acquiring bureaux in the US.

GSI has bid \$2.8 million for Databank of New York and Chicago while CISI is taking over California based Proprietary Computing Systems which operates an IBM 370/158 and a 3031 and provides APL services.

### Scots IBM deal

IBM computers are now being bought, sold and leased in Scotland, by Claremont Business Equipment, of Edinburgh and Glasgow, which represents the London-based IBM dealer, Computer Investments Ltd, north of the border. Claremont's initial portfolio of kit for sale includes five System 38s.

### Swiss pick Philips

THE Swiss PIT has placed an order with Philips Telecommunications of Holland for a 140M bps transmission system for field trials and performance evaluation. The trials will take place between Rapperswil and Wattwil over a 25 km route using existing small gauge coastal cable which is now in service with 12 MHz analogue frequency division multiplexed equipment.

### Rents go online

To handle its council house rent and income accounting applications, Harlow Council has installed a Philips cash receipting system which features online cash tills, VDUs and line printers. From the company's PTS 6000 range, the system is valued at £70,000 and will operate in the council's four cash offices.

### Export orders

EXPORT orders worth £33,000 from Saudi Arabia and Brazil were won by Digico in February for its computer based magnetometer systems that measure the magnetic properties of rocks. The customers are the Institute of Applied Geology in Jeddah and the Federal University of Para, Brazil. Both systems are based on Digico's Micro 10E processor.

### EEC magazine

THE EEC Commission has awarded Systematics International of Basildon, Essex, a contract to process the Commission's UK mailing list for its monthly magazine European Community.

### Irish factory

IRELAND has been chosen by the US magnetic media manufacturer, Verbatim Corp., as the location of a factory in Europe. The plant at Raheen Industrial Estate, Limerick, will employ 350 people at the end of the first development phase.

# £10,000 grant for industrial robot research

SCATTERED, irregularly shaped objects on a conveyor belt are too tricky for existing industrial robot arms to pick up and place into machine tools, but a research project under way at Queen Mary College, London, aims to develop a microcomputer controlled arm capable of doing this at an industrially useful speed. It also aims to find an easy method of reprogramming the arm to cope with a different object or a different machine tool.

The one-year project, financed by the Whitworth Foundation, is being carried out by Dr Jackson Todd, working in the QMC Artificial Intelligence Laboratory. Collaborating with him on software will be Dr Alan Bond, head of the laboratory, and on the design of a gripper and wrist unit Dr Paul Drazan, of Surrey University.

Surrey will also build a pneumatic manipulating arm for the project, based on a design it has already developed.

A £10,000 grant for the project includes £4,000 for this arm and £2,400 for microcomputer equipment consisting of a Z80-based Cromemco Z2D with 32K bytes of RAM, floppy disc drive, analogue to digital converter and additional interface circuitry, as well as a Z80 Assembler program.

Dr Todd is able to draw on published material from other work in this area by Phillips Research Laboratory in Surrey; Lausanne Ecole Polytechnique in Switzerland; Rhode Island University and General Motors Research Laboratory in the US, all involving visual control of workpiece manipulation.

This project is also related to Dr Todd's work last year on microcomputer-controlled robot arm for severely paralysed people (CW, March 2, 1978). This was a feasibility study which investigated several control

methods, layouts of control devices and program structures for manipulation tasks such as picking up a mug and positioning it for drinking.

The control methods included direct control of individual drive motors by different head or residual limb movements, automatic grasp and pick-up from predetermined places using feedback from sensors.

Dr Todd has produced a report on the project which he is sending to a limited number of interested parties.

Control of the medical arm is based on a Nascom 1, but the industrial arm venture uses the Cromemco Z2D because, in Dr Todd's view "the Cromemco is a more industrial machine, more ruggedised and more reliable."

Delays in the delivery of the Nascom kit and memory expansion last year threatened progress on the study, so Dr Todd designed his own S-100 interface so that he could use standard S-100 RAM.



GETTING some first hand data on advanced technology, Clive Jenkins, general secretary of ASTMS, visited ICL's plants in Manchester to see some of the work being done for future products, and to meet members of its association from West Gorton and Dukinfield.

Plans to move manufacturing activities from West Gorton, and to devote that site entirely to R&D, are well advanced. A plant to produce printed circuit boards is nearing completion in Upper Brook Street, and a second Manchester factory is being built for the assembly of large systems including the 2970, 72, 75 and 80. Of

the present staff of 3,000 at West Gorton, 1,500 are to be dispersed to the new locations.

Jenkins visited the PCB plant, where a massive automatic stitching bath has already been installed, and was given details of development work by Bill Talbot, director of the Technology Division.

Here Jenkins is seen (second left), during his tour of the production line with (from left), Malcolm Moss, ASTMS divisional officer; Eric Nuttall, printed circuits works manager; and Gerry Hackman, North-west assembly works manager.

## Leased 370s

● From Front Page

were currently being made on another two machines.

The potential losses that could be sustained by Lloyds underwriters became apparent late in 1977 when they stopped writing the so called "J" policies that insured the residual values of IBM machines on seven-year leases with early break clauses (CW, December 8, 1977).

The Lloyds move followed IBM's announcement of the low cost 303X machines which dramatically affected the values of bigger 370s on lease. The 4300 series launched earlier this year has had a similar effect on smaller 370s and a 25% cut in 303X prices expected some time in the next three months could further exacerbate the problem.

Loss adjusters have already estimated that the potential claims could cost Lloyds well over \$200 million and claims from ICL alone could account for \$100 million of this.

ICL's marketing of the Advanced System series of IBM look-alike processors is now more important than its traditional third party leasing business. The firm has also just started selling performance boosting firmware to IBM's own customers. See page 40.

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Data General Corporation 1978. CW3

## DIARY

**APRIL 2**

Fortran array processing and DAP. A. Wilson, BCS Fortran specialist group, BCS HQ, 19 Mansfield Street, London W1, 11.00.

**APRIL 8**

Software engineering and standards for microprocessors in telecommunications applications. IEE, Savoy Place, London WC2E 7BP, 10.00.

**APRIL 9**

Distributed network systems. BCS Glasgow branch, McCance Building, Strathclyde University, Glasgow, 10.00.

**APRIL 16**

Portable communication systems. IERE, Royal Institution, Albemarle Street, London W1, 10.00.

**APRIL 18**

AGM, BCS Harlow branch. Seeon Hall, Harlow, 10.00.

**APRIL 19**

Computer audit - past, present and future. B. Jenkins, BCS Auditing, BCS Computer group. Details contact secretary on 01-228 9771.

**APRIL 20**

Workshop experience in the use of video. ICL, Palace, BCS Reading branch, The Copper Inn, Pangbourne, 2.00.

**APRIL 21**

Joint meeting with the IEE, BCS, and the Institution of Mechanical Engineers, 11, Bedford Square, London WC1R 4EJ, 10.00.

**APRIL 22**

What price microcomputers? The Computer Society, 11, Bedford Square, London WC1R 4EJ, 10.00.

**APRIL 23**

Computer-aided design in the textile industry. ICL, Palace, BCS Reading branch, The Copper Inn, Pangbourne, 2.00.

**APRIL 24**

Computer-aided design in the textile industry. ICL, Palace, BCS Reading branch, The Copper Inn, Pangbourne, 2.00.

**APRIL 25**

Computer-aided design in the textile industry. ICL, Palace, BCS Reading branch, The Copper Inn, Pangbourne, 2.00.

**APRIL 26**

Computer-aided design in the textile industry. ICL, Palace, BCS Reading branch, The Copper Inn, Pangbourne, 2.00.

**APRIL 27**

Computer-aided design in the textile industry. ICL, Palace, BCS Reading branch, The Copper Inn, Pangbourne, 2.00.

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- \* XY Cursor Address (send and receive)
- \* Roll or Page Mode
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- \* 24 Lines of 80 characters per line
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- \* Teletype Compatible
- \* Hard Copy Printer Output
- \* Selectable Half or Full Duplex
- \* Video Output for External Monitors
- \* Green Phosphor Non-glare Screen



Model 7000

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- \* CCITT V24 Interface
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## GILB'S MYTHODOLOGY

Can you measure the  
quality of your database?

CAN you give me a number, currently measured, which expresses the degree to which I can trust the data in your database or file?

When you started your database project, did you specify the level of confidence others should be able to have in the correctness of data in the database? Did you do so quantitatively? Did you specify a practical measuring method so that you could prove that your project had met its database reliability goals?

If so, you are one of the few people or organisations in the world that has, and you should write down your experiences for us fellow professionals to share.

I marvel at the audacity of it. We just take a chance on the quality of one of our most critical resources. We certainly don't check the quality of the input or the programs that can produce incorrect data in our

database. The application programs which handle the database records rarely do more than surface checks on the quality. The complexity and quantity of data in the database forbid any human checking effort.

A lot of professionals will not immediately agree with my assertions about the lack of control, which is precisely the problem. We think we have adequate controls, and we have no adequate measuring tools to tell us that we are wrong!

I asked about 40 database specialists in London how many of them used anything resembling a database audit (checker, diagnostic, call it any of these) program to subject their databases to a thorough check and measure of reliability. Only two claimed they did, and one of those changed his mind when he understood the question.

In August 1977 I visited Bell Labs and met a group who take their database quality control seriously. They are responsible for some very large databases. One of them, Jim Grimes, has published a report (EDPACS Journal, Feb 1977) on Bell's use of database audit programs.

Bell uses an auditor sampling technique which gives an interesting quantitative measure of the quality of the database data. One must keep in mind that the Bell database audit programs are extremely deep in their checking. It takes IBM 370/158s, using IMS, about two hours to audit five hundred to a thousand records.

The Bell technique samples at random. If the sample contains NO ERRORS after sampling a thousand records, then it can be asserted with 99% confidence that the reliability is equal to greater than 99.5% (Reliability in the area that the audit program covers).

Grimes shows a table:

Number of Random Records Selected	Maximum Error Rate (99% Conf.)
100	4.5
500	0.9
1,000	0.5
2,000	0.2
5,000	0.1

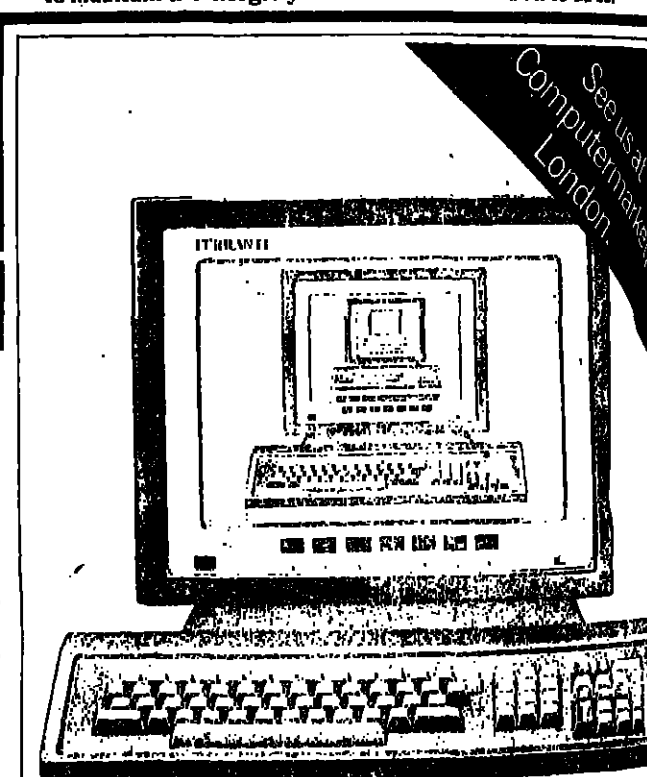
In a sense, this is no more than automated auditing.

But in my mind it represents a conceptual breakthrough of interest to all database designers and database administrators. It gives us a specific tool for measuring the quality of the diverse efforts intended to maintain the integrity of our

databases. We can monitor only our own application programs, but failures in database software (which Bell reported detecting with its audit program) and in hardware.

In setting our project goals we can select a minimum level of database reliability, and assign into the project an audit program and procedures for practical measurement of its achievement of that goal.

I have already begun to practise this in my own design practice, and as far as I can judge it would be a step forward for us all to do so.



## PT7. Look closer.

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## TIS conference

CINCOM'S UK and European customers will have their first opportunity to evaluate TIS (CW, October 12, 1978) at the firm's eighth international user conference to be held at the London Heathrow Hotel on April 23-24.

## PROGRAMMER NOTES

Learning patience, humility,  
and who's boss from VME/B

ICL's top-end operating system for the 2800 range, VME/B, has been much censured for lacking critical facilities, such as a file-store equivalent, and for its error-prone telecommunications package, Komplex.

Such design omissions and weaknesses have been a major source of irritation to users, and in the case of Komplex have obliged ICL to rewrite the package, a task that is still in process.

While it is likely that many of the deficiencies will be corrected in future releases, it could still be some time before all the problems are ironed out. Meanwhile users continue to struggle in certain areas.

Some of these areas have now been highlighted in satirical vein by Professor David Barron, of Southampton University in his capacity as a user of the university's 2870.

Under the title *Helpful Hints for VME/B Users*, Barron identifies the following curious pieces of system behaviour:

1) "If your program suffers a

stack overflow, the program listing and the spooled output from your program are thrown away. This feature is intended to assist program debugging, which is so much easier if you do not know what the program was, nor how far it got before the trouble occurred.

2) "If your MAC terminal does not respond to Control-A, and you sit there impatiently pressing the key (as one might lean on an unresponsive doorbell), you will screw up the terminal, and on a good day you may crash the entire system."

"This feature is intended to teach you the virtues of patience and humility, and to show you who's boss."

3) "If you have written a text-processing package, and use it at a MAC terminal to produce camera-ready copy suitable for an offset-litho printing machine, your carefully arranged layout will be ruined by periodic appearances of the mystic incantation **BREAK IN ACCEPTED**."

## Puzzler

8	2	3	1	9	2	5	4	2	7	3	2
4	7	9	4	1	9	4	7	8	4	4	7
8	3	3	5	8	4	4	6	1	5	9	3
3	7	5	3	7	3	7	4	7	4	8	3
6	6	4	9	1	5	3	8	5	2	2	6
1	5	3	1	8	5	9	3	4	6	2	8
9	1	7	7	2	6	2	7	3	8	1	7
9	1	6	2	4	4	8	6	9	2	8	1
3	5	2	8	9	3	3	1	2	7	2	5
6	7	4	6	1	1	6	9	4	2	6	9
3	8	1	3	6	8	1	7	2	8	5	4
5	3	9	6	1	8	2	5	1	7	2	8
7	3	6	4	5	2	7	2	9	2	5	2
9	5	2	8	9	5	1	6	8	1	6	8

THIS week's problem is to start at the 8 in the top left-hand corner, and then trace a continuous non-intersecting route through another 39 numbers to achieve the maximum possible 40-square combined total of 282. Each "move" through the matrix must be made horizontally or vertically and not diagonally. See page 38 for solution.

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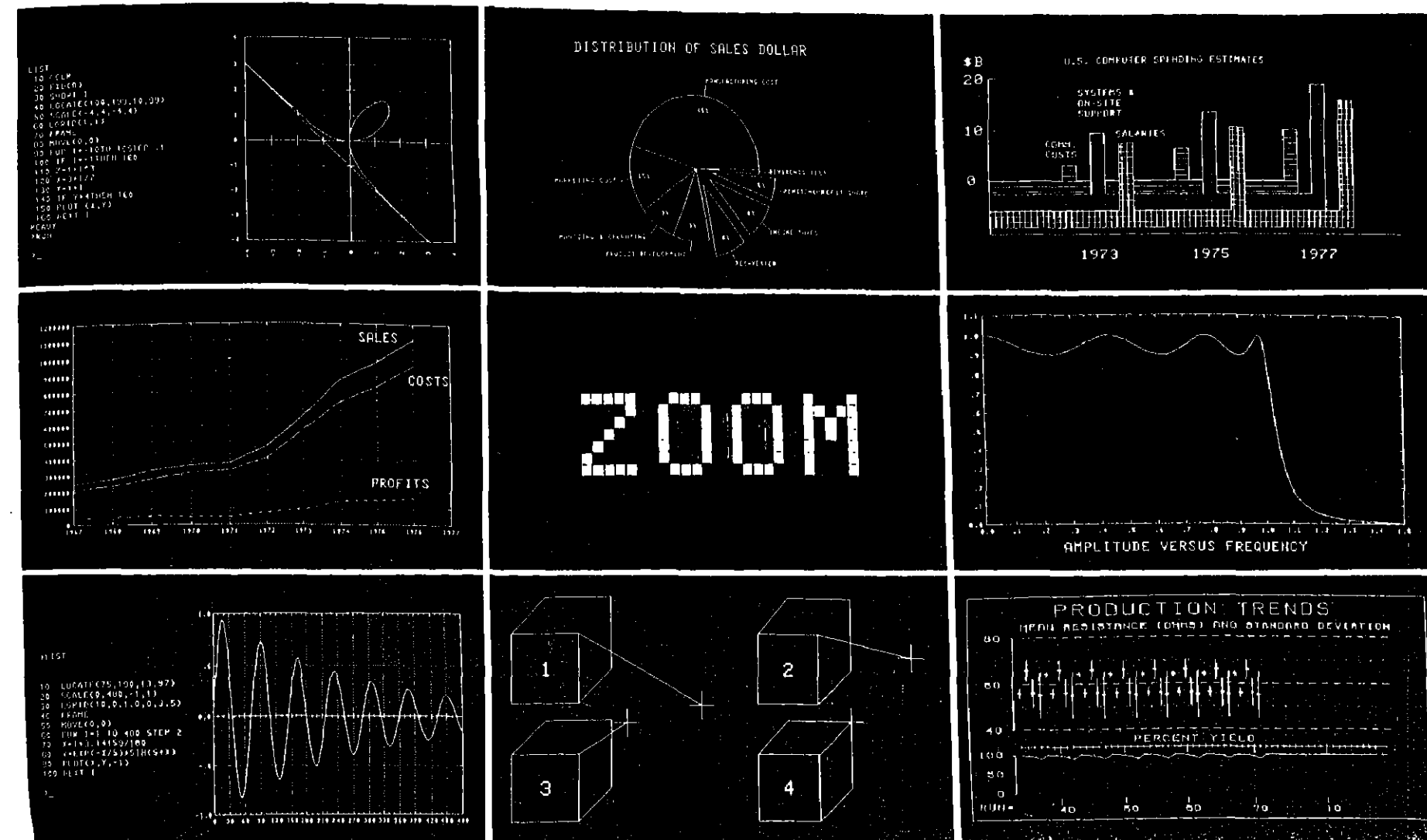
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Selectively erasing, shading important areas to make them stand out or using a rubber-band line to make a quick sketch can all be done without any help from your programming department. It's more than smart.

What if your CPU's output isn't tabular? Or if you'd like to plot derived data, say a three-month moving average from monthly sales figures? Or if you need more than a bar graph, pie chart or line graph?

The 2647A's not just smart, it's intelligent. You can program it to reformat data from your CPU, or to compute more data, in easy-to-write BASIC and you can program it in AGL, our high-level graphics language extension of BASIC. Its powerful commands, such as FRAME, AXES, LABEL, LOCATE and PLOT put sophisticated graphics at your fingertips. Hard copy's easy.

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The 2647A's also a programmable alphanumeric terminal for interactive use on-line or by itself with independent alphanumeric and

graphics memories.

It also features a bright, easy to use, high resolution display and a built-in dual cartridge tape drives for 220K bytes of mass storage. And with eight soft keys you can define to do several steps with a single keystroke.

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## PEOPLE

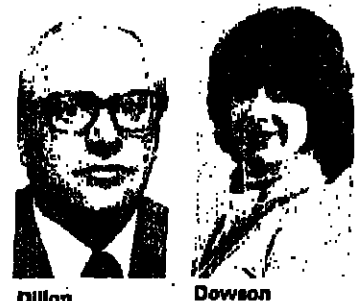
## Two directors for MSC Europe



Wiskin

THE newly formed UK subsidiary of Microcomputer Systems Corporation, MSC Microcomputers (Europe), has appointed Alan Wiskin as managing director. He is responsible for establishing a marketing and customer support network for the MSC range throughout Europe. Prior to his new appointment, Wiskin was sales and marketing manager for Borer Electronics, and before that was sales manager for the Ampex GB computer peripherals group. His earlier career included the position of European sales and marketing manager for Friden International, Belgium.

John Barnes has been appointed technical director of MSC. He was formerly senior sales engineer with Ampex GB, and prior to that was technical support manager with GTE Data Products and Infotex.



Dillon

Dowson

Richard Dillon has been appointed European finance and administration director of Modular Computer Systems. He joins Modcomp from Honeywell where he was UK and European controller. Dillon will be based at the company's European headquarters in Wokingham, Berkshire.

Mike McCartney has been appointed by Honeywell Information Systems as customer services division manager for Ireland. He was previously technical supervisor for the customer services division's minisystems group.

Michael Hunt has been appointed vice-president of International Operations with Management Science America. He was formerly director of International Operations with Cincom. Also a former employee of Cincom, where he was general manager of the UK operation, is John Hale, who has become managing director of the new British subsidiary company, MSA Limited.

Richard Carter has joined Computer Machinery Company as territory manager responsible for sales in Essex and Suffolk. He was formerly a salesman with NCR. A former salesman with Burroughs, Philip Venney, has joined CMC as a territory manager responsible for sales in Adwick, Berkshire and Oxfordshire.

Thomas Elrod, vice-president and general manager of the data systems division of Persee Computer Corporation, has been appointed as a senior vice president. Ralph Gahal, who is vice-president and general manager of the peripherals division, has also been appointed as senior vice president of the company.

Rick Van Vliet has become product marketing manager for semiconductors with Samsco. He was previously a senior component engineer with RS Components.

Anne-Marie Dowson has joined Arbat (UK) as administrator in the company sales and marketing department. She previously worked for Radfon Computers as administrative manager at the London sales office.

John Richards has joined the Terminal Systems division of Data Logic as a sales executive. He was formerly a banking consultant with ICL. Previously export sales manager for DRI at Staines, Michael Cooper has also become a sales executive with the same division of Data Logic, and Peter Morris has joined the Communications Product division as a sales engineer.

## SOFTWARE FILE

By Peter Hewitt

## Canadian system for OS program development

ANOTHER proprietary system has emerged in the critical field of interactive facilities for OS/VS1 following the launch of Altergo's Guts (Software File, March 22) and the European Software Company's Tone-3 (Software File, June 28, 1978).

Called OTS (Online Terminal System), the latest alternative was developed by Canadian European Systems of Vancouver, Canada, and, like Guts, the software also runs under all other OS versions, including MFT and MVT.

It is being marketed in Europe by a CES office in Dublin which has found a notable early customer in the Irish government's Central Data Processing Service; CDPS is running the software under VS1 on its 370/158 and 3031 in Dublin.

OTS is seen by the company primarily as an online program development system, providing a functional equivalent to IBM's TSO subsystem SPF. It could, though, be seen as a full alternative to TSO by those interested in program development features only.

Among its principal features are facilities for interactive compilation, execution and debugging. These support the usual range of development tools, such as the PL/I checker, and are backed up with interfaces to library systems including Panvalet, Slick, and The Librarian.

The system in addition provides facilities for RJE, JCL syntax checkers; tools for data set and catalogue maintenance; a full screen editor; and terminal accounting statistics.

All of this driven by a simple command language, which can be built up into library procedures for handling repetitive functions.

CPU and memory requirements are notably lower than for TSO, with few users needing a region greater than 1/2 Megabyte. This would support around 15 terminals under VS1, depending

on the applications being run.

Under MFT, a 200K byte region would typically support around six users, while a similar MVT region would support around nine terminals.

OTS has been on the market in North America for about three years and has 18 US users. It is priced in the UK at £12,000, with a 10% annual maintenance charge.

CES is also marketing a disc compress utility that is a direct replacement for IBM's IEH-DASDR, IEHMOVE, IEBCOPY,

and IEHISAM.

Chief feature of the system called CYV (Copyvolume), is speed. A full 3330-IT can be copied and compressed in less than 12 minutes, and a full 3330-IT in less than 11 minutes. The software can in addition quickly copy small groups of data and optionally recataloguing them.

CYV, which also includes a fast VTIO listing subsystem, is priced in the UK at £1,000 for disc-to-disc environment, and £1,500 for a system also handling backup FDR tapes.

## Russia and Bulgaria sign licensing agreements with ADR

A NOTABLE breakthrough into marketing software behind the Iron Curtain has been achieved by Applied Data Research with the signing of agreements in Russia and Bulgaria. Government agencies in both countries have negotiated licensing agreements with ADR giving them access to nearly all of the company's system software products.

Packages likely to be of particular interest include Roscoe, The Librarian and Volle, all of which will be run on the IBM-compatible Rjad ES series. The agreements do not at the moment appear to include the Datacom range of DBMS soft-

ware which ADR took over last year (Software File, August 31, 1978).

The closing of the deals follows software seminars held by the company in each country over the last two years. ADR representatives visited Sofia, the capital of Bulgaria, in 1978, having conducted presentations in Leningrad one year before. A feature of the latter was a demonstration of Roscoe running online to an ES series machine in Helsinki, Finland.

ADR products, which are handled in the UK and several other European countries by CAP-CPP, are already extensively used in Western Europe.

Indeed this market accounts for around 75% of ADR product installations overseas, currently in excess of 3,000.

This, though, will be the first time that ADR has sold products in Eastern Europe. Understandably, sales of software to the Eastern Bloc are few and far between, but other instances to have occurred in the last year include SPL's supply of RTL software to Romania.

An ADR spokesman noted that the implementation of the agreements had not yet begun, bringing dependent upon approval from the US Chamber of Commerce.

## 'Turmoil ahead' in semiconductors

IN 10 years from now there will be no large companies purely manufacturing semiconductors. This was the message put over by Lester Hogan, vice chairman of Fairchild Camera and Instrument Co, in a paper in which he suggested that the turmoil of the 1980s, which ultimately caused the downfall of most of the major discrete components manufacturers, could be repeated with today's big semiconductor firms.

Hogan stressed the need for semiconductor firms to integrate vertically by producing complete systems and also for them to develop a wide variety of low-cost devices which satisfied the demands of most customers.

"The semiconductor industry is no longer technology driven," Hogan asserted. "It is sure to have the capability to develop a chip with one million components, but who will want it? There will not be enough electronic systems in the world to use all the chips that the industry can produce."

"In five years' time the semiconductor industry will have the capacity to overkill the



Hogan

requirements of its customers. What it needs to do instead is to design chips that will minimise the total cost of a system. Remember, the 4-bit micro has far outstripped its bigger brothers and is continuing to do so."

Hogan believed that the cost of designing a microprocessor with a million components would be very high indeed, pointing out that a 16-bit micro with about 15,000 components takes about 10 man-years to design, while a million-

component chip could take up to 200 man-years and cost something like \$15 million.

"Even assuming that improved design aids will be available for designing a million-component chip the design time and cost will only be cut by a factor of four at the most."

Hogan intimated that he was impressed with the methods used by IBM in manufacturing the logic chips for its new 4300 series machines, in which it starts with a programmable emitter-coupled logic array and uses an electron beam to write custom designed circuits.

He felt that the direct write facility provided by electron beam technology would lead to it dominating the VLSI industry because of the ability it provided to custom-manufacture chips.

In the short term at least, Hogan saw considerable revenue growth for the semiconductor industry and predicted that sales would be worth about \$3,500 million by 1982.

## Into chips too late?

"THE UK government has decided to go into silicon processing at a time when US venture capitalists have decided that it is no longer worth it and are putting their money into systems manufacturing."

This view on the prospects for Immos was expressed at the conference by Lester Hogan, vice chairman of Fairchild.

Hogan presented a paper in which he asserted that in 10 years' time there would be no major firms involved purely in semiconductor manufacturing, and that there was a real danger that the semiconductor industry faced saturation of demand.

## Role of the vendor

"THE entire computer industry, including IBM, will turn to the chip vendor industry for certain components," forecast Dick Petrutz, managing director of Immos. He added that "64K dynamic RAMs are not likely to be made by computer companies for much longer; these companies are not in the 'jelly bean' business."

Petrutz sees the electronic industry entering a fifth generation of electronics — the NMOS VLSI era — but he confesses to not knowing what lies beyond. MOS technology will be the most common, although Schottky technology will have a part to play. A 32-bit microcomputer with on-chip 1,000K bit memory

is expected by the mid 1980s. Turning to investment, Petrutz admitted that the semiconductor entry fee had become too high for the private investor, but he firmly believed that where sufficient venture capital was available there was clearly an opportunity to get a share.

Five components were necessary for success, Petrutz listed these as: adequate finance, technological change (i.e. the Immos 64K RAM doing the job differently and better than others), market expansion, employing the best people, and finally, a true venture capital organisation with entrepreneurial structure and employee participation.

Leaders of international electronics and computer companies were among the speakers at a London conference last week, where the future of world electronics was discussed. GARETH JONES, MARTIN BANKS and KEITH JONES report on some of the highlights of the event, which was organised by the Financial Times.

## Model for predicting effect of technology on jobs

A METHOD of measuring the relationship of technology to employment trends was described at the conference by Ian Mackintosh, chairman of Mackintosh Consultants. He said his mathematical model was based on reasoning put forward in 1972 by Stonier and Hague in their book, A Textbook of Economic Theory. In this they showed that only technical progress allowed consumers "the opportunity to satisfy progressively more and more of their wants", while at the same time maintaining economic growth.

This, said Mackintosh, was a basic tenet of economic theory that was little understood, either by the public or by governments. As an exercise at the conference he applied the model to the UK electronics industry, both by sector and as a whole.



Mackintosh

Taking the average production of the 45,000 employed in the computer manufacturing industry as \$25,300, and comparing it with the industry's trade gap (a net loss of \$210 million), it was possible to deduce the number of jobs "lost"

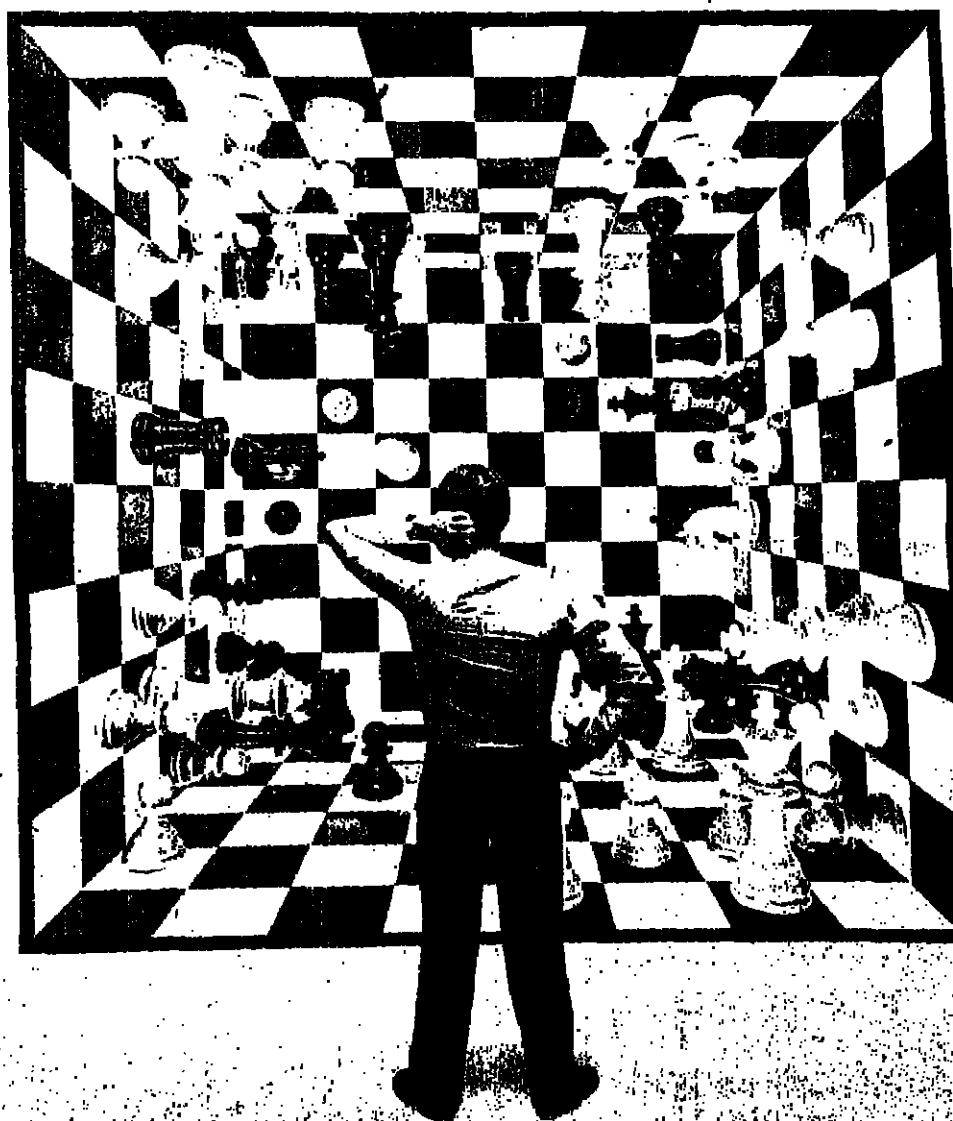
as 8,300. A similar exercise for the whole electronics industry showed 20,000 jobs "lost."

Using his model, Mackintosh predicted that in a "best case", one in which there was a low increase in productivity, employment would rise by nearly one million in the electronics industry by 1988. A "worst case" with large increases in productivity, employment showed a drop to about 250,000.

Mackintosh suggested that what must be done now was to carry out a similar exercise for all industrial sectors, especially the non-electronic sectors where the impact of technology was liable to be substantial. Only then would it be possible to construct realistic forecasts of future employment implications.

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The company is easily accessible by either road or rail and offers excellent company benefits together with the reassurance of a progressive and rewarding career. NON-CONTRIBUTORY PENSION SCHEME, FREE LIFE ASSURANCE and PROFIT-SHARING SCHEMES are only some of the benefits to accompany the attractive salary and MORTGAGE facilities.

Ref. N1/2903

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Ref. NW1/2903

### SYSTEMS PROGRAMMING

### VME/B TRAINING

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Have you had the opportunity to work with 2800 software? Our client has recently installed a dual 2870 configuration. They now wish to increase their systems programming team by the addition of two programmers.

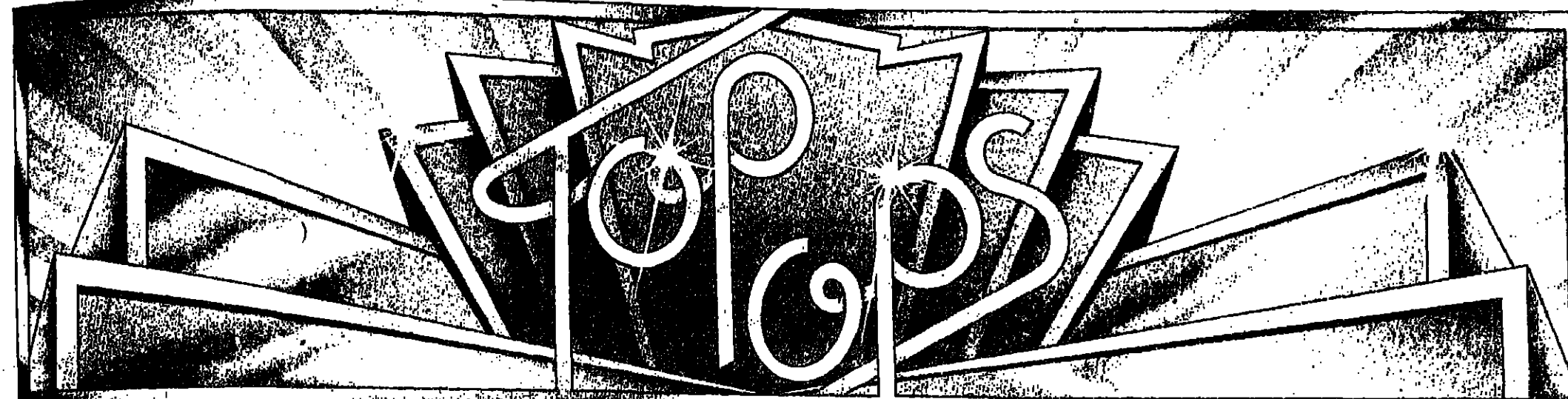
Applicants should come from a systems' programming background and should have knowledge of GEORGE III or may possibly be acquainted with VME/B. The successful candidates will receive comprehensive training.

The installation is one of the largest and most advanced in the country. The systems programming section has the challenging task of tuning and maintaining the operating system and advising analysts and programmers on technical aspects of the operating system.

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Ref. SE2/2903

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New installation. Days to start. later 2 shifts.  
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bonus scheme. Call Elaine or Sally NOW.

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now for further details.

**IBM 370 — DOS VS POWER OPS.**  
Middx. & London. For further details of those and  
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**ICL 1900 GIII OPS** **KENT**  
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Ref: S5/2903

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THIS KEY POSITION reports to the Chief Finance and Administration Executive and guarantees exciting career progression for an 'achiever' who would take charge of a sophisticated mini computer system with eight interactive stations, specialise and implement US developed accounting systems in the UK, and together with the Controller and a software house install live accounting systems to administer total financial control of the Company. Subsequently, the person appointed will develop branch/head office systems and controls including the effective use of sophisticated word processing.

APPLICANTS must have a combination of business and technical competence which will enable strong and effective project control to be provided from the evaluation of the clients needs through to the production of programming specifications in a sophisticated mini computer environment using Virtual Storage techniques. Solid achievement in the areas of financial and stock accounting is essential and will preferably have been gained within a large international organisation. Preferred age 28/35.

Write in confidence quoting CWF 305  
to D.H. May - Adviser to the Company.

*peterson davidson ltd*  
3 Mandeville Place, Wigmore Street, London W1M 5LB Telephone 01-486 89

## JBA

### Systems Manager

North Oxfordshire c. £9,000  
Our client, a well known British engineering organisation, wishes to appoint a Systems Manager to take responsibility for the design, development and maintenance of applications for the Parts & Service Division. Candidates should have a minimum of six years experience in a commercial systems environment with at least two years in a position of responsibility. A background of manufacturing, stock control and distribution would be very desirable. Since the company may have to replace its hardware sometime in the future, knowledge of equipment selection, real-time and database systems would be an advantage. Generous salary and benefits.

Contact: Jim Baker

### Systems Consultants

London Up to £9,000  
Our client, one of the largest software houses in Europe, has opportunities for professional staff to join an expanding consultancy team. The work includes advising clients on systems development, design and implementation of medium to large application and project management. Candidates should have at least five years experience in the design of commercial applications particularly where real-time or database techniques have been used. A proven background of project leadership is obviously an advantage. Salary negotiable according to experience. Excellent career prospects. Relocation assistance available.

Contact: Jim Baker

### Programmers (Insurance Company)

Hampshire up to £6,700 + mortgage subsidy +  
One of the most prestigious insurance services companies in the UK with an impressive 40% growth factor last year, are recruiting additional staff for development work. Many systems are under way including installation of a DMS 2 database and a large real-time terminal network. Completion of these projects opens the way for a considerable number of additional systems thus ensuring creative work for the future. Applicants must have sound COBOL experience and at least 18 months experience in a real-time environment, ideally using Burroughs equipment, but this is not essential. First class location, outstanding employment package and realistic career prospects. Call for more details.

Contact: Mike Creamer

For further information on any of the above vacancies please contact the appropriate consultant. If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

**JAMES BAKER ASSOCIATES, International Personnel Consultants**  
16 Maddox Street, London W1. Tel: 01-491 4478

### DEC Analyst/Programmers

London/Home Counties £6,000 - £8,500 + Bonus  
This client is a city based software house which is continuing to attract development projects and PDP Turnkey assignments from a prestigious and growing customer base. On joining their team of consultants, successful candidates will have the opportunity to significantly contribute to the growth and expansion of this still small and versatile company - and be extremely well rewarded for doing so. Preferred experience is of high-level programming on PDP-11's under RSTS/E, but any good mini experience is always considered. Bonuses and profit sharing can provide up to £1,500 pa on top of salary - each consultant has the chance to earn a stake in the company. An unusual and exciting opportunity.

Contact: Andy Wright

### Programmer Analysts

SW London/Surrey Start to £6,900 or £9,000  
Specialising in the provision of conversion services to installations changing or upgrading hardware and software, this company offers a technically challenging career in a continually changing environment. Candidates must have a sound knowledge of COBOL, and those with extensive experience of Honeywell are particularly of interest. Applicants already at a Senior Level will be considered for Project/Team leading positions, with start salaries of between £8-9,000. If you relish the idea of travel (many of the company's projects are on the Continent) and variety and look forward to a technical career there is every chance that you may fit our clients' requirements.

Contact: Andy Wright

### Fortran Programmers

London to £7,500 + profit share  
One of Britain's leading technical bureaux offering time sharing, conversational remote batch and batch processing services through a network based on large mainframes need programmers to join an expanding technical support team. The work content is both interesting and varied with a high level of client contact. Candidates should ideally be graduates, able to show evidence of some prior experience of working successfully with users/clients and be able to carry out project work to a high degree of competence. These posts will provide an opportunity for enthusiastic people to work in a sophisticated environment where a strong emphasis is placed on advanced software products and well qualified support staff. Contact: Margaret Stevens

# SUPERVISOR, COMPUTER OPERATIONS

West End  
Up to £8,800 p.a.

A leading petrochemical organisation is seeking a Computer Operations professional to be responsible for the day to day running of their computer room activities.

Their data processing function is centred on an in-house IBM 370/125 under DOS/VS and POWER/VS with RJE links to an IBM 370/158 MP under MVS/JES3 at their Hamburg location. It is, therefore, essential that the person appointed should have a strong IBM DOS/OS background. At least six years' operations experience including supervisory/management responsibilities in a medium/large IBM 370 installation is also required. You will most probably have also received some formal management training.

This position will use to the full your administrative, technical and management abilities for you will be responsible for controlling, motivating and providing technical guidance to an operations section of c. 10 people.

If you are between 25-35 years of age, show professionalism in appearance and manner and above all have the desire to succeed, then you will enjoy and appreciate this environment.

Based in a pleasant area of London, the company is offering a starting salary of £7,800 p.a. - £8,300 p.a., plus London Weighting Allowance (at present £548), Luncheon Vouchers (£1.05 per day), a very good contributory Pension Scheme, Membership of BUPA and four weeks' holidays.

Please apply to Marilyn Black, quoting reference 2328/CW.



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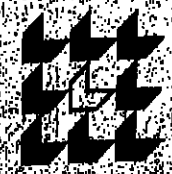
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- \*Good technical background
- \*Management or supervisory experience or potential
- \*Good communicative skills.
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Closing date for receipt of completed application forms is Wednesday 11th April 1979.



## STAR JOB SPOT

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£4,000 to £6,200 fme  
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### DEC PROGRAMMERS

£4,600 to £8,500  
LONDON & HOME COUNTIES  
We now have commercial user organisations and 30 Software/Consultancy firms looking for DEC Programmers with 15 months' or more experience. Why not ring us now and enquire about your chance to improve both salary and status. RSTS or RT11 experience are added pluses. CW-13/2 MICHAEL

### ICL COBOL PROGRAMMERS

£6,400  
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Are there any of you who are creative and want to work for a leading company in the City? N. LONDON, ENFIELD, BEDFORD, MAIDSTONE, TUNBRIDGE WELLS, BRIGHTON, CROYDON, REDHILL, BRENTFORD, SLOUGH & HARROW. Come on, don't be shy, phone us NOW. CW 13/5, MICHAEL

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You should be able to demonstrate experience in front-line systems selling. It would be advantageous if you have technical experience within Data Communications but, above all, you must show the ability to relate closely to a customer requirement.

The successful applicant will receive a good basic salary in addition to a very lucrative commission scheme which offers tremendous financial possibilities. A comprehensive benefits package includes the provision of a **company car**.

For a confidential discussion and more details on the position described please contact Douglas Woodward on the number below or on Crayford 527062 after 7.30 p.m. or at weekends.

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2. Technical Author with a background in microcomputers, preferably at both H/W and S/W level. Ideally, candidate should have some experience of assemblers, operating systems etc. in a micro environment. (Ref: BCT 080279).

3. Technical Author with sound knowledge of optics and modern digital techniques. Ideally, candidate should be familiar with Time-Mechanics and High Voltage Systems. The work will involve writing service documentation (handbooks, operating manuals and information sheets) in the field of microscopy. (Ref: GWK 220379).

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Candidates must have at least six years in the d.p. industry with four spent in the design and development of commercial applications, possibly as a project manager or DPM. Knowledge of database and real-time techniques would be an advantage.

Salaries are negotiable according to experience. Large company benefits including bonus and relocation expenses. Overseas opportunities also exist.

For an informal discussion please contact Jim Baker,

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Projects Managers  
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**REQUIREMENTS**  
University degree with at least 2 years' relevant data processing experience

Salary will commensurate with qualifications and experience and will not be less than S\$27,000 per annum. (Current IATA exchange rate: £1 = S\$4.31695.) Successful applicants will initially be employed on a 2 to 3-year contract. On expiry of contract, they may be considered for permanent employment at salaries applicable to local staff.

Attractive fringe benefits include:

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Interviews will be held in London in May 1979.

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**TEAM LEADERS  
PROGRAMMERS**

**£7500 + (UK)  
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**£15000 + (OVERSEAS)  
£12500 + (OVERSEAS)**

Applicants for the above positions will join our advanced systems division. They must have at least 3 years' programming experience, which includes a minimum of 1 year in a real time environment. Assembler, a maths or physics degree and experience in a scientific environment are also desirable.

Both the team leaders and programmers are required to join both existing teams and new teams working on development projects in a high technology environment.

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Applicants should possess:

- ★ previous experience of selling commercial mini computers or small business systems
- ★ a confident sales personality coupled with a proven, successful track record in selling.

All major Company benefits apply to these appointments, so if you are interested in working in a thoroughly professional environment and have the desire and ability to succeed with one of the world's leaders in this growth market sector then

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Salary up to £5,000

This large Manufacturing company seeks young programmers with 18 months+ experience in COBOL, preferably gained in an IBM mainframe environment, to join their D.P. Dept. currently engaged on developing on-line Manufacturing and Financial Systems, based on an IBM 370/158 using IMS with ROSCOE for program development.

The Company offers excellent training facilities with good prospects for personal progression.

Relocation expenses where appropriate.

Ref: CW20378

### NOTTINGHAM

#### Senior Applications Specialist (Systems Analyst/Project Leader)

Up to c. £8,000

#### Systems Analysts

Up to c. £7,000

#### Programmers

Up to c. £6,000

Our Client, an established systems house, supporting DEC mini computers, wishes to make the above appointments due to further planned expansion.

The successful candidates will have genuine capabilities, the systems analyst having been involved in systems analysis and design from feasibility to implementation, of general commercial accounting/manufacturing applications, etc., preferably in an ON-LINE/MINI COMPUTER environment.

The Programmer should have sound experience of BASIC and/or COBOL, again preferably on minis.

Outstanding applicants with t.p. experience on mainframe, may be considered.

The Company offers excellent opportunities for personal progression together with the security of terms and conditions of employment akin to any large commercial concern.

Ref: CW40379

### NORTH MANCHESTER

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Salary up to £7,000

Our Client, a major manufacturing company, has an opportunity for an experienced Systems Analyst preferably with a programming background.

Eventually this candidate will have sound systems analysis and supervisory experience having designed and implemented at least one major system. Previous experience of IBM equipment and on-line techniques would be useful.

The emphasis is on Business and Manufacturing systems in a CICS DL/1 environment.

Ref: CW50379

### MANCHESTER

#### Systems Programmer

(New Post)

Salary c. £8,000

Our Client, a leading Company in the Transportation field, wishes to appoint a Systems Programmer. The successful applicant will be engaged on the implementation of new operating systems, their improvement, review and support.

The Company operates a Unisys mainframe supporting 40 VDU's in local and remote locations. The successful candidate must have 2 years' sound ASSEMBLER level programming together with experience of real time systems. Previous Systems Programming experience would be an advantage.

The Company is situated in a modern office block and offers excellent terms and conditions of employment, including opportunities for career progression.

Ref: CW10378

### SHAW CARPETS BARNLEY, YORKSHIRE

#### Systems Analyst

Salary up to £8,000

This manufacturing company with a sophisticated D.P. organisation based on an IBM 370/138 under DOS/VS using CICS for real-time and local teleprocessing systems now requires a Systems Analyst to join their small enthusiastic team engaged on a variety of applications.

Ideally the successful candidate will have some knowledge of programming and be capable of working alone.

The Company offers first-class terms and conditions of employment. Assistance with relocation will be available where necessary.

Ref: CW30379

### NORTH MANCHESTER

#### 3 Systems Analysts

c. £5,750

This client engaged in Manufacturing and Distribution areas, due to expansion, now requires to increase its systems teams with 3 Systems Analysts preferably with ICL 1900 experience, and essentially with the following:

- On-line Systems Design
- Implemented at least one system
- COBOL Programming background

Hardware includes ICL 2960 under GEO II. Systems are also being developed on DEC minis.

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Ref: CW60379

For application forms in respect of these and many other vacancies, please contact: Miss Val Halliwell

VICTORIA APPOINTMENTS LIMITED, 24 MOSLEY STREET, MANCHESTER 2. 061-236 7319 (24-hr. Answering Service) and 061-236 7417. Home 061-440 8134

# Contract Vacancies



## NORTH WEST

IBM 370 IMS Cobol Programmers  
ICL 1904 George III Cobol/Plan Programmers  
ICL 2900 CICS Cobol Programmers  
ICL 2900 Fortran Programmers  
Univac 1100 Assembler Programmers  
PDP 11/70 Diabol Programmers  
IBM System 3 RPG11 Programmers

## YORKSHIRE

ICL 1900 CICS Cobol Programmers  
ICL 2900 Cobol Programmers  
IBM System 3 RPG II Programmers

## NORTH EAST

ICL 1900 Cobol Programmers  
IBM 370 Cobol Programmers  
PDP 11/70 Basic + Programmers

## SOUTH

Honeywell 66 GCOS Cobol Programmers  
Honeywell 66 IDS/TDS Cobol Programmers  
IBM 370 PL/1 Programmers  
ICL 1900 Cobol Programmers  
PDP 11/40 Basic + Programmers

### SDM COMPUTER SERVICES

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## Bolton/Bury Computer Unit PROJECT LEADER

SALARY GRADE PD 1B £5895/£6513 (Inclusive)

An opportunity has arisen to join a well-established installation with ambitious plans for future development.

The successful applicant will lead one of three application development teams and will be expected to display the necessary qualities consistent with such a position. Applications are therefore invited from suitable persons with several years' experience in systems analysis, who are now seeking increased responsibility. A COBOL programming background would be an added advantage.

The Joint Computer Unit provides the data processing requirements for both Bolton and Bury Metropolitan Borough Councils, with a combined population of approximately 440,000. The existing hardware comprises an ICL 180K 1903T under George 3, supporting a number of local and remote terminals. Input is provided by Redifon Key to Disc equipment.

Benefits include a system of flexible working hours together with excellent holiday allowances.

Application forms from Personnel Officer, Town Hall, Bolton 22311 Ext. 587, to be returned by 20th April, 1979.

## AGRICULTURAL RESEARCH COUNCIL INSTITUTE FOR RESEARCH ON ANIMAL DISEASES

### SCIENTIFIC COMPUTER PROGRAMMER

Required to join Statistics Section involved in the development of database management and statistical computer systems. The successful applicant will work with statisticians in the section and collaborate with research staff. The Institute has remote links to an ICL 4/70-72 computer at Rothamsted Experimental Station. Qualifications: degree, HNC or equivalent, with experience in computer science, mathematics or statistics, at least 5 years' relevant experience for appointment to HSO.

Salary scales: Scientific Officer £2839 p.a. to £4415 p.a. or Higher Scientific Officer £4101 p.a. to £5448 p.a. depending on qualifications and experience. Non-contributory pension scheme.

Application forms: Secretary, Institute for Research on Animal Diseases, Compton, Nr. Newbury, Berks. RG16 0NN. Quoting ref. 306.

## MEASUREX (IRELAND) LIMITED

Due to continued expansion, there are opportunities for five persons presently engaged in the Electronics/Computer industry who wish to expand into Digital Control, in our growing training department.

### Salary Range:

£5,000 - £7,400

Whilst presently located at our manufacturing plant in Waterford, the training department will shortly re-locate to a purpose designed training centre currently under construction in Cork City.

WE ARE interested in talking to persons who are: At Senior Technical Level, preferably with several years' experience in the Electronics/Computer industry.

Recent Graduates, with an interest in Digital Process Control and willing to learn.

### RESPONSIBILITIES OF TRAINING INSTRUCTOR:

Having completed appropriate training the successful candidates will join an established team of instructors in our training department. This team conducts courses for the company's Field Service Technicians and in addition are responsible for the design and development of new courses. Measurex Corporation is a leading manufacturer of Digital Process Control Systems for the paper, plastics, rubber and sheetmetal industries in Europe and internationally. The company offers excellent benefits including a contributory pension scheme.

Due to postal dispute please telephone for further details to:

Pat O'Neill, Marketing Manager  
Measurex International Systems Ltd.  
Monks Mead House, Hare Hatch  
Twyford, RG10 8BA, England  
Tel: (073522) 3871

## Telecommunications Engineer

An experienced electronic/computer engineer (male or female) is required for the commissioning/maintenance of a new ICL 7502 computer terminal network. Initially 10 screens and printers are to be installed by the end of the year, and after a period of training it is proposed to provide a centralised repair service. The data network will be based upon the Board's private PCM radio system and a knowledge of such systems is required. Applicants must have served a recognised training and be technically qualified to at least HNC level in electronic engineering.

Earnings within the range £5,525/7,260 per annum.

For an application form ring David Gabriel on 061-834 8161. Ext. 252, to be returned to the Secretary, Norweb, Chestwood Road, Manchester M8 8BA by 20th April 1979.



## MERSEY DOCKS AND HARBOUR COMPANY

### COMPUTER OPERATORS

Salary £4,312-£4,993 (incl. shift premium)

Vacancies have arisen within the Management Services Department for experienced Computer Operators.

Applicants should have a minimum of 2 years' operating experience, preferably with I.B.M. equipment, although J.C.L. knowledge and tele-processing experience.

We are currently operating twin I.B.M. 370/158 machines under D.O.S. V/S with POWER.

Membership of a contracted-out Contributory Pension Fund is compulsory following a period of probation. Assistance with relocation expenses will be given in appropriate cases.

Application forms to be obtained from: Administration Manager (Personnel), The Mersey Docks and Harbour Company, Port of Liverpool Building, Liverpool, L3 1BF.

(Tel. No. 051-238 8010 ext. 205)

Application forms should be returned to the Personnel Department following the date of publication of this advertisement.

## JBA

# SYSTEMS PROGRAMMER

Surrey

£6,000-£7,700

Our client is a large organisation dedicated to, and using, the most modern mainframe equipment and systems available today. They are currently running an IBM 3032 (4MB) and a 3031 (2MB) with both on-line and batch applications incorporating OS/VS1, VM/CMS and CICS/VTAM, with the installation of MVS and SNA well underway.

A vacancy has occurred for an enterprising, relatively junior, Systems Programmer in the Technical Support team. Ideal applicants will already be familiar with performance orientated products and have a good knowledge of SYSGEN and operating systems. Total systems programming experience must be at least two years with an IBM installation of reasonable size.

This is an excellent opportunity for making that move onto the larger more powerful equipment, with the prospect of getting involved in real-time network systems. Good further training is available together with dedicated encouragement to accept responsibility, leading to rapid promotion and salary improvement. (Note salary range quoted is currently under review.)

Contact: Mike Creamer

JAMES BAKER ASSOCIATES  
International Personnel Consultants,  
16 Maddox Street, London W1.  
Tel: 01-491 4478

## ANALYSTS AND PROGRAMMERS FOR REAL-TIME SYSTEMS TO £7000

THE INDUSTRIAL SYSTEMS DIVISION of GEMINI urgently require professional staff to meet the growing demand for their services in the industrial sector of the market.

We are interested in people with a minimum of two years' appropriate experience, with a knowledge of at least one high level language, such as CORAL, RTL/2, FORTRAN or BASIC, and/or Assembler on mini- or micro-computer systems.

We can offer you varied and interesting work within a well-defined but flexible career structure, coupled with a planned training program. Vacancies exist in both our Northern and Southern Divisions.

In addition to a competitive salary which is reviewed every 6 months, we offer a substantial bonus scheme, contributory pension scheme, and free life, health and accident insurance schemes, four weeks' annual holiday, plus generous allowances whilst working on clients' sites in the UK and Europe.

Please phone or write to Trisha Williams at our London Office, or Alexia Hine at our Manchester Office.



Gemini Computer Systems Ltd.  
Industrial South Division  
Collegium House  
44-46 Gillingham Street  
London SW1V 1JH  
Tel: 01-225 8834

Gemini Computer Systems Ltd.  
Industrial North Division  
Roberts House  
50 Manchester Road  
Manchester M14 4JF  
Tel: 061-941 1822



## PL1 PROGRAMMERS

**City to £8500 + Mortgage**  
A national financial group require good PL1 Programmers to work on their twin 370/155's & new PDP 11 equipment.  
They need around 15 MONTHS experience or more in PL1, COBOL or ASSEMBLER, & would also be willing to retrain in BASIC+ for new PDP 11 work. Other attractions include Flextime, Bonuses, Subsidised Mortgages, & Loans after 6 months.

Reference PG 13/1

## TECHNICAL CONSULTANT

**C. London £10,000**  
For people interested in the Software House environment there are currently vacancies in the Real Time and Communications fields within one of the best companies in London.  
You should have 5 years experience in either message switching applications, sales support, PDP 11's, turnkey systems or data communications and wish to progress into a Technical Sales/Sales Support Role. The company offers an excellent salary plus a full pension scheme, interest free season ticket loans, L.V.'s staff purchase facilities and a house purchase scheme.

01.439.7871

Reference HK 13/2

## NEW COBOL PROGRAMMERS

Essex/London Borders

Salary negotiable according to exp.

Our Client is seeking to complement their current Systems and Programming team with several experienced NEAT 3 or COBOL Programmers. Applicants should have a knowledge of NCR CRITERION (or CENTURY) hardware and operating systems. The applications cover stock control, branch charging and general administrative support in a retailing environment which can prove to be very challenging and demands quick response to user requirements. Any necessary training will be provided and benefits include a staff pension scheme, and a subsidised canteen, as well as a first class starting salary. If you would like to take up the challenge or require further information please ring at once.

01.439.7871

PHIL GASCOIGNE

## COBOL PROGRAMMERS

**City to £5300+Mortgage**  
A major financial organisation with an expanding ICL 2900 system is seeking several COBOL programmers. These positions will be ideal for people with 12 to 18 months experience on any mainframe, and who want ANALYSIS prospects.  
The company offers high starting salaries, Season Ticket Loans, Flextime and a Subsidised Mortgage.

Reference PG 13/3

**City to £27000**  
A well known Software House based in the City are currently seeking BASIC+ & BASIC+2 Programmers to work on their growing range of applications, covering both the Scientific & Commercial areas.

A minimum of 6 months Basic+ 2 or 12 mths Basic+ is required and any knowledge of DEC Hardware would be advantageous.

The company offers very good salaries with other benefits including a bonus scheme.

01.439.7871

Reference HK 13/4

## CONTRACTS

REGISTER NOW FOR IMMEDIATE &amp; FORTHCOMING REQUIREMENTS THROUGHOUT

LONDON \* U.K. \* EUROPE

DUE TO OUR CONTINUALLY CHANGING REQUIREMENTS WE ARE ALWAYS INTERESTED IN HEARING FROM COMPUTER PROFESSIONALS WITH A SOLID D.P. BACKGROUND TO WORK WITH MAJOR CLIENTS WHO ARE ALWAYS ABLE TO OFFER A WIDE VARIETY OF INTERESTING & CHALLENGING REQUIREMENTS.

REMEMBER: WE PROVIDE TOP CONTRACTS WE PAY TOP RATES

CALL

BOB EDWARDS

TELEX 25851

01.439.1856

## OPERATIONS SUPPORT

Slidcup to £5000

A large International Organisation based in an easily accessible part of N.W. Kent is currently looking for staff at various levels for their expanding technical support department. A minimum of 1 years operating or data control experience is required, preferably with some IBM OS JCL knowledge, although this is not essential.

The installation is linked via a Data 100 network to a large 370/158 running under OS/VS1. The technical support department operates a flexitime system and therefore this is an ideal opportunity for operators to move from shift work into an interesting and demanding day only position.

There is a recognised company career path which includes the possibility of moving into programming in the future. Excellent staff benefits include discount on a wide range of products, staff restaurant, and an active sports and social club, one of the amenities being a swimming pool on site.

For further details call

Mike Harmer on 01.439.7871

## OPERATIONS NCR CRITERION 8450

Essex/London Borders £4000

We are seeking an Operator for our Client on an NCR CRITERION. They operate a 256K 8450 running three partitions utilising the B3 operating system. They have both batch and real time systems with hardware covering Disks, Tapes, two printers and over twenty online terminals including an online Document Reader, Printer and V.D.U.'s.

The applicant should be over twenty years old and have a current driving licence. The shift system operated is on a short three shift basis with limited night work. Staff benefits include an excellent subsidised restaurant and pension scheme.

If you would like to join the small team of operators running this system whether or not you have B3 experience (B1 experience will suffice) please contact

01.439.7871

SEAN ORR

Datascene International Ltd. Telex 25851  
Sceptre House  
169-173 Regent Street  
London W1R 7FB 01-439 1856

## SENIOR PROGRAM DESIGNERS

£7,500 p.a.

Hoechst UK currently require three Senior Program Designers to work on a complete spectrum of applications. These will include the increasing use of "on-line" and "database" facilities (CICS/DL/1). Hardware is a 370/148 under OS/VS1.

The Senior Program Designers will be responsible for the technical aspects of project design, project implementation and the effective control of resources.

The experience required is ideally a knowledge of project planning and control techniques, systems design with project management capability and self-motivation. Experience of IBM Cobol or Assembler would be an advantage.

Based at Hounslow, West London, Hoechst UK's working conditions, benefits and development opportunities are commensurate with the drive and expansion of a professional data processing department.

For further information please contact (in strictest confidence)

MIKE BURTON at  
DIRECT PROGRAMMING SERVICES LTD.  
51 LONG LANE  
WEST SMITHFIELD  
LONDON EC1A 9EL — Tel: 01-606 1738 (24 hrs. service)

Hoechst

Hull College of Higher Education  
SYSTEMS MANAGER

Applicants are invited from suitably qualified applicants for the post of Systems Manager with Computer Services. The Systems Manager is responsible to the Director of Computer Services for the production and modification of operating systems software, the production and maintenance of the subsystems which interface the user interface to the computer system, and the supervision of systems programming staff (initial establishment one programmer/analyst).

The College is in the process of selecting new hardware, to enhance its computer services. The Systems Manager will be involved in the selection process.  
Applicants should have considerable experience of systems programming, most usually on multi-computers such as DEC 4000 series or PRIME, and should possess a degree or equivalent qualification (such as BSC Part 1).

The appointment, which is full-time, will be on the Burnham Senior Lecturer Scale.

Salary Scale: Senior Lecturer  
£8,061-£7,066 (bar) £7,572

The post is subject to NAC Conditions of Service.  
Application forms and further details may be obtained from the address below, to which completed forms should be returned by the 10th April, 1979.

The Personnel Section  
Hull College of Higher Education  
Conington Road, Hull HU6 7RT  
Telephone (0482) 41461

## MANAGEMENT SERVICES DEPARTMENT

This advertisement appears with the permission of the New Town Staff Commission.

## COMPUTER OPERATOR

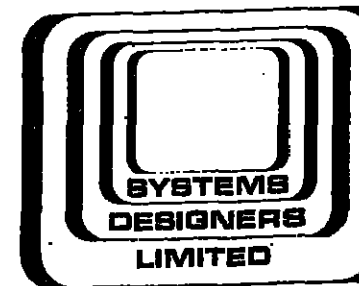
Grade TS (23,732-24,146)

Experienced Computer Operator is required to take charge of a team of Operators working on an alternating shift system for which a shift allowance is payable. A knowledge of I.B.M./370 Series and Telexprocessing whilst not essential would be an advantage.

Application forms can be obtained from the Management Services Office, Town Hall and Civic Centre, Sunderland, SR2 7DA, to which completed applications should be returned not later than Thursday, 5th April, 1979.

For a full and complete description of the post, please refer to the job description booklet.

Borough of Sunderland



## Programmers &amp; systems engineers in Manchester: up to £6,500

Systems Designers Limited is an independent British systems consultancy, backed by the NEB, and with an unrivalled reputation in mini and micro computer applications. Established in 1968 and currently 150 strong, the company is expanding its operations in both the UK and abroad. A full order book and continued demands for our high quality services have produced an immediate requirement for a number of professional programmers and systems engineers for our Manchester office.

Current projects are challenging and rewarding and the company policy of full participation of all members offers broad prospects and opportunities for rapid progress for top people. Requirements exist for people with broad experience in the design and implementation of mini and micro computer systems using both assembler and high level languages. We are interested in hearing from programmers and engineers with at least one year's experience. Applicants must have good academic qualifications and a proven software ability, together with a professional outlook.

Please write to: Telephone: John Bradbury at 3 Elm Road, Woodlands Road, Atricham, Cheshire WA14 1HG. Telephone: (061) 928 8306.



Gold Helm EXECUTIVE APPOINTMENTS  
26 QUEEN SQUARE, BATH BA1 2HX  
TELEPHONE: BATH (0225) 330311

A RARE BIRD  
BUSINESS ORIENTATED ANALYST

is required by our client, a medium-sized manufacturing organisation, near BATH. Responsible directly to the Systems & Administration Manager, the Person will be involved in liaison, support and running of mini-computer based systems within a small D.P. department which acts as a fast turn-around service bureau to the Company. A suitable person will:

- \* have D.P. experience as Analyst and Programmer — ideally PDP 11/RS/TS/E.
- \* have a good understanding of manufacturing applications — eg from an O&M background.
- \* ideally want full involvement with the Company and its aims.
- \* be self-motivated and able to communicate at all levels.

Salary is £5K-£6K dependent on experience, with good prospects of promotion.

We can provide information on schools and housing in the area, so if you are interested please telephone 0225 330311

HARRISON LINE  
SHIPPING - LIVERPOOL  
PROGRAMMER

We operate regular sailings (Container/Conventional Cargo) to the Caribbean, Gulf of Mexico, South/East Africa also Bulk Carriers. We use a DEC 11/70 and a DEC 11/45 and some 30 terminals in Liverpool, London and Glasgow.

We require an experienced Programmer to join the small team responsible for the development and maintenance of this department. A working knowledge of Basic Plus and Fortran IV would be advantageous. Salary commensurate with experience. Good staff conditions.

Telephone or write to: Mr. J. Harrison, Liverpool 12, 200, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.

Datascene Recruitment Ltd.  
Sceptre House  
169-173 Regent Street  
London W1R 7FB 01-439 7871





# Sales Professionals Major Manufacturer London, Birmingham, Manchester

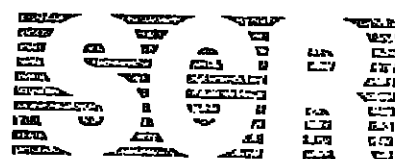
Achievable quota and excellent support - earnings in excess of  
**£14,000 + benefits**

Our Client, a major International Mainframe and Mini Computer Manufacturer, are seeking additional sales professionals to work in London, Birmingham and Manchester. They offer the prospects of working within the majority of business environments, including commercial, Government and manufacturing. They require thorough sales professionals who may not currently be job hunting but have enough awareness to evaluate the market place and join an Organisation where five-figure earnings are the reality rather than the exception.

For further details contact:  
Richard Champion

on 021-236-3781 (24 hour answering service) or Hagley 4166 (evenings & weekends)

Interviews to be held in London, Birmingham and Manchester.



London 01-035 0871 3 Mandeville Place, Wigmore Street, London W1M 5LB  
Birmingham 021-236 3781 35-37 Great Charles Street, Queensway, Birmingham B3 3JY  
Manchester 061-833 0427 Blackfriars House, The Personage, Manchester M3 2JA

Specialist Computer Recruitment Ltd

## MARK IV PROGRAMMER TO £5,500

If you have at least 12 months' experience in MKIV, preferably under OS, then join at the start of a major phase of development on a project running on an IBM 370/158. Applications are also invited from programmers experienced in other languages who wish to learn MKIV.

As well as writing and maintaining application programs, the successful applicant will gain useful experience in analysing and designing systems enhancements.

For an application form, please write to or telephone: Craig Thrussell, Whinney Murray & Co., Turquand Barton Mayhew & Co., 57 Chiswell Street, London EC1Y 4SY. 01-628 6088, Ext. 378.

### \* CROYDON/CRAWLEY AREA \*

### \* EXPERIENCED PROGRAMMER \*

with one year's Fortran. Immediate start. Six months plus assignment, with expenses. Permanent or contract.

Contact: I. Gold or R. Carr on 01-388 0036.

FRASER WILLIAMS (LONDON) LTD.  
38 Warren Street, London W1P 5PD

**Fraser Williams  
Computer Consultants**

LONDON LIVERPOOL MANCHESTER BIRMINGHAM SHEFFIELD GLASGOW SPENCER

## MYRIAD DATA COMMUNICATIONS

### Sales Executives

Basic C £6000

+ Car

Quota

£12-14000

The continued technological advancement within the Data Processing industry has enabled computer installations throughout the world to be brought together within seconds. A major "LINK IN THE CHAIN" is advanced data communications equipment where innovative technical skills have created an ever-increasing demand for this specialised equipment.

Our client is an established manufacturer of powerful and highly sophisticated communications equipment. The product range encompasses modems, multiplexors, and Data Network Management Systems. To cope with the upsurge in demand for these products, additional sales personnel are required for strategic areas throughout the U.K.

Ideal applicants will have previous experience of marketing data communications equipment or will have a strong background in service engineering where they will be able to relate confidently in technical issues.

An excellent basic salary is offered plus a generous commission scheme and company car. The current development and success the company is experiencing offer excellent career prospects geared to personal ambition and achievement.

Ref: N2/2903.

MYRIAD APPOINTMENTS LIMITED

30 Fleet Street London EC4Y 1AA

01-353 0981 (24 HOURS)

### UMIST LECTURER IN DEPARTMENT OF COMPUTATION

Applications are invited for the above post to develop research and teaching in the design and application of programmable microelectronic devices. Applicants (male/female) should have some experience in at least one of the following areas:

- CAD of digital systems
- Concurrent Programming
- Cross translation facilities
- Distributed processing systems
- Interpretive machines
- Microprocessor development systems
- Microprogramming
- Software reliability

The department of Computation has Undergraduate and Postgraduate courses and close links with the Microelectronics Applications Unit which provides an interface to the industrial community. The successful applicant will have the opportunity to collaborate with the Unit, for undertaking industrial projects or by participating as a course for the retraining of engineers in the application of microelectronics. The facilities in Computation comprise a PDP 11/34 system which hosts a microprocessor development environment plus a teaching laboratory with 8 PDP 11/03 systems. There is also ready access to the CYBA-M multi-microprocessor research vehicle and to several Microprocessor Development Systems.

Salary will be on the scale £3883 or £7764, which is subject to a revision from October 1978 and a further award from October 1979.

Write for application forms quoting reference COM 745/100 to the Registrar, UMIST, P.O. Box 88, Manchester M60 1UD to whom they should be returned by the 30th April, 1979.

### WEST MIDLANDS COUNTY COUNCIL

#### WEST MIDLANDS POLICE SYSTEMS ANALYST/ PROGRAMMER

£5232-£6060

To undertake feasibility studies, systems investigation, design and implementation, advice on computer requirements, evaluate systems in use and write, test and maintain programs. Applicants should have relevant university/professional qualification and at least 2 1/2 years' experience in computing (including 2 years in systems design). Experience in development of on-line or Management Information Systems advantageous.

Applications by letter only quoting post no. 202 to the 237 full career and relevant relevant details to the County Personnel Officer, West Midlands Police Council, County Hall, Birmingham B4 7LJ by 15th April 1979.

# Telecomputing People

## COBOL PROGRAMMERS - to £5,500

### MANCHESTER AND OXFORD

Programmers with at least 12 months cobol experience, preferably ICL, to work in project teams on a wide range of applications. This is an ideal opportunity to get into online systems.

## SENIOR PROGRAMMERS - to £6,600

### MANCHESTER AND OXFORD

Experienced COBOL Programmers to work on a wide range of projects. Experience of online systems would be a distinct advantage. The range of projects is always varied and there are ample opportunities to work on customer sites if so desired.

## SALES EXECUTIVE - £7,500 + commission + car

### MANCHESTER

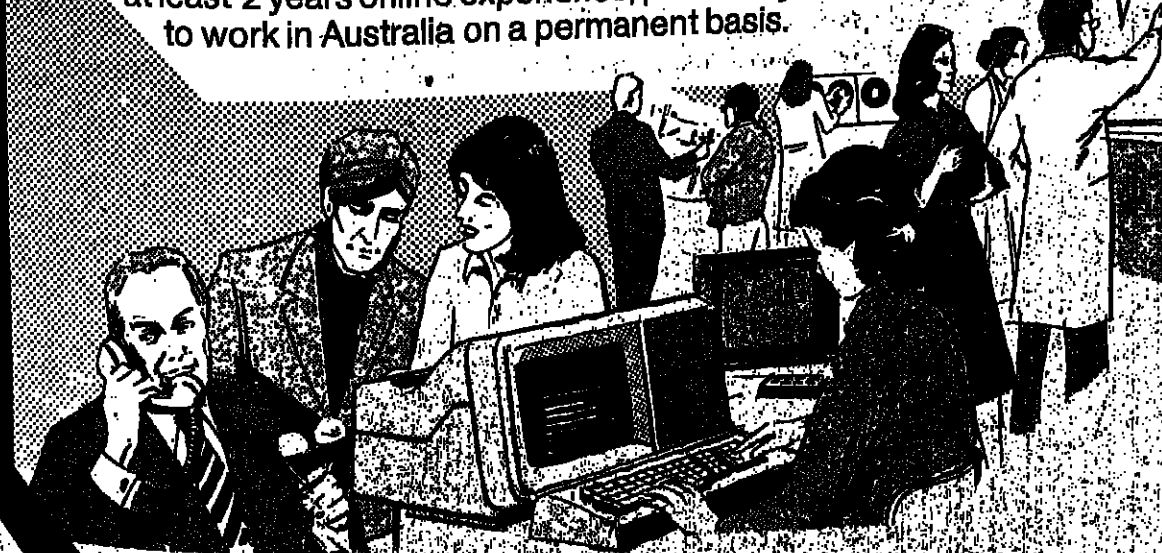
We require a Sales Executive to cover the Northwest and sell TPS, Terminals and Project services. Computer experience is essential and a proven sales record a distinct advantage. Earnings potential is high and there are opportunities to advance into territory management.

## SOFTWARE SUPPORT OXFORD - with OVERSEAS TRAVEL

We require experienced people to join our software support team. Ideally candidates will have sound on-line experience, preferably ICL 1900 and have worked with TPS. The job is varied and interesting with ample opportunity to travel overseas. With the availability of TPS under VME/B and VME/K later this year, this position offers an ideal opportunity to progress to 2900 series with the manufacturers of the world's leading TP monitor on ICL machines.

## AUSTRALIA SYDNEY & MELBOURNE \$A 14,000 - 20,000

We require more experienced COBOL Programmers/Analysts with at least 2 years online experience, preferably including TPS, to work in Australia on a permanent basis.



Offices in Oxford, Manchester, Amsterdam, Paris, Sydney, Melbourne

Telecomputing provides advisory and implementation services for installing online computer systems around the world.

When you join us you are taking the opportunity to develop your career in a growth company.

We have an informal atmosphere and expect to reward people according to their effort.

If you are interested in any of these vacancies or would like to discuss a career with Telecomputing phone or write to Chris Swinbank on Oxford (0865) 723621, Telecomputing, Seacourt, Tower, Westway, Oxford OX2 0ED



# SENIOR PROGRAMMERS

Leeds to £5,750

Senior Programmers are required by our client to augment existing teams working on major new systems developments.

Advanced hardware is installed and wide use is to be made of database, on-line and real-time techniques.

To be considered for these outstanding opportunities candidates should have three years COBOL experience.

Interested? Call Ivor Norton quoting reference CW/79018.

Ivor Norton Management Services Ltd

P.O. Box 63, Copthall Tower House, Harrogate HG1 1TS. Tel: Harrogate 66628.

TIME FLIES YOU  
CAN'T THEY GO  
SO FAST

Simple punctuation can turn this seemingly meaningless phrase into grammatically correct English. A small prize is offered for the first one hundred correct answers received.

Inter-City Programming Support would also like to hear from Programmers requiring contract or full-time employment in and around the U.K. and Europe, with particular emphasis on the following experience:

UNIVAC 1100  
IBM 370  
ICL 1800  
ICL 2803/4  
ICL System 10  
ICL 2900 Series

COBOL & ASSEMBLER  
COBOL & ASSEMBLER  
ASSEMBLER

ASSEMBLER  
COBOL

\*Knowledge of German language would be a great asset.

Inter-City Programming Support  
Limited  
Harpole, Northampton NN7 4DH  
Tel. (0804) 831191  
Telex: 311150 INTCIT G  
Answerphone service outside  
office hours

## OPERATORS

JUNIOR AND SENIOR OPERATORS WITH A MINIMUM OF 6 MONTHS' EXPERIENCE ON ANY MAINFRAME REQUIRED URGENTLY. LISTED BELOW ARE A SMALL SELECTION OF CURRENT VACANCIES

ICL	GH	S/LDR	1 1/2 YRS	£5600
ICL	GH	OPERATORS	1 YR	£4500
ICL	GH	OPERATOR	1 YR	£4300
ICL	2900	OPERATOR	1 YR	£4300
ICL	ANY	OPERATOR	9 MTHS	£4000
DEC	PDP	OPERATOR	2 YRS +	£5000
HONEYWELL	OS2000	OPERATOR	1 YR	£4600
UNIVAC	EKECB	SNR OP	18 MTHS	£4500
HONEYWELL	GCOS	OPERATOR	1 YR	£4000
BURRS	B800	OPERATOR	6 MTHS	£3800
IBM	OS	S/LDR	3 YRS	£5800
IBM	OS	S/LDR	4 YRS	£5800
IBM	OS	SNR OP	3 YRS	£5700
IBM	OS	OPERATOR	1 YR	£4500
IBM	OS	OPERATOR	6 MTHS	£4200
IBM	DOS	S/LDR	2 YRS	£5600
IBM	DOS	SNR OP	2 YRS	£5600
IBM	DOS	OPERATOR	1 YR	£4750
IBM	DOS	OPERATOR	2 YR	£5000
IBM	DOS	OPERATOR	1 YR	£4900

DATA CONTROLLERS, ALL AREAS  
£3000-£5000

TARGA COMPUTER SERVICES

3 LIVERPOOL STREET 01-283 2751  
LONDON EC2M 7NH

# MYRIAD

## SYSTEMS ANALYSTS

SOUTH HERTS

CIRCA £7500 + BONUS

These positions will be filled by analysts with experience on large commercial systems or in the management of several smaller projects running concurrently. They will possess the personality to train and motivate a team of more junior analysts and programmers through all phases of development.

The successful applicants will be responsible for identifying user opportunities and preparing business proposals, including cost and benefit appraisals. They will have good business skills, allied to systems experience, to prepare valid proposals, plan project requirements/resources and gain user approvals.

During development the systems analyst will co-ordinate the work of his/her project groups, resolving technical problems, planning activities and reporting regularly to user management. A good knowledge of the company's policies and a thorough understanding of systems interfaces will be maintained.

Career prospects are first-class, with the company affording every opportunity to persons wishing to advance into a more senior role. Operating large IBM equipment, the data processing department services a wide variety of users in the U.K. and Europe. Extensive plans for additional hardware are soon to be announced.

The company is a very successful, international organisation situated on the outskirts of London in modern offices that overlook the countryside of Hertfordshire. Employee benefits include generous relocation expenses, an excellent pension scheme, a staff restaurant and a very active sports and social club.

Ref: S3/2903

MYRIAD APPOINTMENTS LIMITED  
30 Fleet Street London EC4Y 1AA  
01-353 0981 24hours

## ANALYST/PROGRAMMER

(Ref: CW/1/79)

The computing facility at our Teesside Oil Terminal is currently developing and updating both technical and commercial applications with the emphasis concentrated on on-line systems.

Presently the existing site installation is IBM System 3/15D which is part of an expanding worldwide TP network based on 303X/370 equipment. Plans are already being made for replacement of the site installation equipment around 1980.

An opportunity is now available for an Analyst/Programmer to join our small, highly skilled team. Ideally the candidate will be of Degree/HND Standard, aged around 25/30 with an ability to communicate easily with a wide range of users ranging from accountants to engineers. Some TP experience and knowledge of COBOL will be an advantage.

Applicants who feel that they meet these requirements and would like to benefit from the highly competitive employment conditions this position offers should write or telephone to: Mr. A. Jackson, Industrial Relations Officer (quoting job reference number).

PHILLIPS PETROLEUM COMPANY

Teesside Operations, Seal Sands, Middlesbrough, Cleveland TS2 1UJ. Tel: 0642 546411



## Computer Engineering Instructor

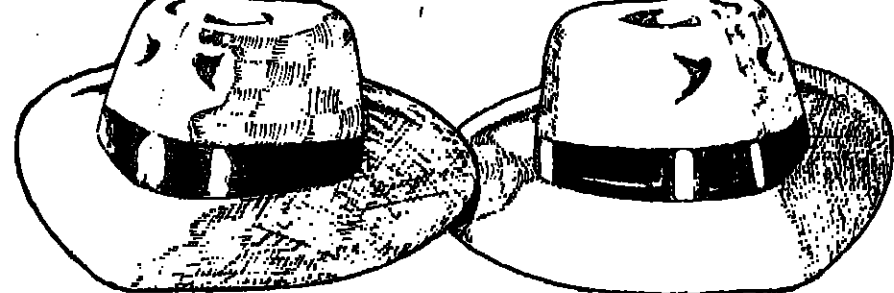
Control Data, worldwide leaders in all aspects of computer products require a Computer Engineering Instructor. The position is based at Control Data Institute near Oxford Circus W.1. The successful candidate will join a team of instructors responsible for training selected candidates for a career in Computer Maintenance Engineering.

A range of plug compatible peripherals. Experienced Customer Engineers with a flair for teaching or Engineering Instructors with experience in peripheral engineering are particularly invited to apply. A competitive salary package is anticipated for this unique and challenging opportunity.

Please telephone or write for an application form to the School Secretary, Control Data Institute, 77-79 Wells Street, London W1P 3RE. Tel: 01-4637 2171.

CONTROL DATA

## ETL need someone with two heads



## Product Manager c £9000 + Car Allowance

Quite honestly at CTL we have a problem. We're looking for a person who can not only communicate with a highly skilled technical design team, but also communicate with and motivate an aggressive sales force. Such people can be hard to find... but when we do the rewards will be high.

As Product Manager, you'll be given full marketing responsibility for a group of products - working closely with other Product Managers to ensure full integration of CTL's market strategy. Your key responsibilities will be for product launches and promotions, keeping abreast of market development, ensuring product literature and training is available and to propose, initiate and progress product and market development to maintain a competitive position for CTL.

Candidates, male or female, should have a considerably background in software products and previous experience in a marketing environment. Creativity, persuasive ability and first class communication skills are desirable.

We can offer a salary in a range up to £9000 plus a car allowance and excellent company benefits include relocation expenses, where appropriate. Please contact Jim Parle, Personnel Officer, Computer Technology Limited, Eaton Road, Hemel Hempstead, Herts HP2 7EQ. Tel: Hemel Hempstead (0442) 3272.

CTL

The British Computer Systems and Software Company

## Systems Analysts

Experienced in real-time and batch applications development on Honeywell or Datapoint equipment? Then we've prepared something of genuine interest to you. It's an information pack on the benefits of working with us at our Stoke-on-Trent H.Q. and it makes fascinating reading. Send for it by telephoning Stoke on Trent 45101 ext 477 or writing to: Sellers, SPS, Michelin Tyre Company, Limited, Stoke-on-Trent ST4 4BT. Tel: 01827 4517.

Switch to Michelin

## Computer Operations Controller

The Harma Group operate an IBM 370/135 under DOS/VS. The system supports two batch partitions and a TP network. We have a vacancy for an Operations Controller to supervise a staff of 12 and to look after the day-to-day running of Data Preparation, Data Control and Computer Scheduling. The successful applicant will probably be a shift leader with at least three years' experience in computer operations and a knowledge of JCL for DOS. Familiarity with POWER, TASKMASTER and LIBRA-RIAN would be an advantage.

We plan to convert to IBM 4341 in 1980/1.

35-hour week, 4 weeks' holiday plus 11 statutory days.

Please send brief details to:  
Mr. G. C. Hooker, Group D.P. Manager  
HARMA INDUSTRIES LIMITED  
Wharfedale Road, Tysley, Birmingham B11 2DF

## THE POLYTECHNIC, HUDDERSFIELD

Department of Computer Studies and Mathematics

## SENIOR LECTURER OR LECTURER II

COMPUTING/INFORMATION SYSTEMS (Ref: ACA/337)

The principal degree and diploma courses within the Department involve major studies of applications of computers in business, industry and public authorities. Applicants should have appropriate practical experience of at least one of the following areas:  
a) information analysis and systems design  
b) applications programming  
c) design and implementation of data bases  
A good Honours Degree and/or MSc is essential. Staff are expected to undertake activities, including research, in addition to teaching duties.

Salary: £18,000-£27,000 (Ref: 77572)  
L1 04101-05058

Further details and application forms will be sent on request to: 12, April 1979, from the Personnel Office, The Polytechnic, Queensway, Huddersfield HD1 3DH. Telephone: 0484 22255 or 22256.

## PROGRAMMOORES IN WEST YORKSHIRE

WE ARE Moore's Furniture Division; a private furniture manufacturer in rural Yorkshire with an impressive growth record.

WE HAVE an ambitious systems development plan for our young and energetic Data Processing Department involving Production, Financial, Commercial and Process Control systems.

WE USE one of the first IBM Series/1 computers in Europe, operating under EDX, and have plans for considerable hardware enhancement.

WE NEED ANALYST/PROGRAMMER Up to £6,500 responsible to the DP Manager for project developments through to successful implementation. If you have progressed from programming and have around one year's systems analysis experience, we are interested. Alternatively, you may be a programmer who would like to move into systems analysis.

PROGRAMMER Up to £6,500 If you have at least two years' experience of a commercial high level language, preferably on production-oriented applications, and possibly a knowledge of an Assembler-type language; then we are keen to hear from you. You will be responsible to the DP Manager for co-ordinating the programming effort required to achieve our plans.

PROGRAMMER Up to £5,250 We are also interested to hear from programmers with perhaps only one year's experience of a commercial high level language.

INTERESTED? THEN PHONE OR WRITE TO: The Personnel Manager, Geo. A. Moore & Co. Ltd., Thorp Arch Trading Estate, Wakefield, West Yorkshire LS2 7DD. Telephone: Boston 894 842394.

## STRATHCLYDE REGIONAL COUNCIL

### GLASGOW Sub-Region ROADS DEPARTMENT RESIDENT ENGINEER

Broomielaw Computer Traffic Control Centre, Glasgow  
Salary Scale - A.P.V. - £5599-£8086\*  
AREA TRAFFIC CONTROL CENTRE  
Area traffic control by computer is undertaken at 94 junctions in the City Centre of Glasgow. In addition, research into area traffic control is undertaken in conjunction with the Transport and Road Research Laboratory and a feasibility study to assess the city's future expanded requirements for control of traffic by computer is almost complete.

The current responsibilities of the Resident Engineer at the Centre are as follows: a) Ensuring that the Control system and the phasing arrangements for the City Centre signals are efficient; b) Programming the on-line computer system for continual updating of the existing operating system; c) Research into on-line and off-line methods of traffic control in association with the Transport and Road Research Laboratory; d) Supervision of technical staff.

Candidates must have a Degree in Engineering, Computing or related subject and must be Chartered Engineers or have obtained a relevant Higher Degree. Experience in Area Traffic Control systems and in Traffic Management is desirable.

\*This salary range is inclusive of supplement.  
Application forms may be obtained from The Assistant Director of Manpower Services, 21 Gordon Street, Glasgow G1 3PE, to whom completed forms, quoting Ref. Q670, should be returned by 12th April, 1979.

R. M. O. McCULLOCH  
Director of Manpower Services

## Shift Leader

required in the Computer Centre which operates a 128K - ICL 1903T with EDS 80's, a GEC 2050 RJE, and a GEC 4070 interactive computer. The Centre is run on a 2/3 shift basis using parallel George 2 streams and ICL Mainframe.

Preference will be given to candidates with ICL 1900 operating experience. Salary according to qualifications and experience within scale £3,483 to £4,088 p.a. plus 20% shift allowance. Overtime payment is payable. Generous holidays and sick pay scheme. Local Government superannuation.



Application form from:  
Employment Office  
Cranfield Institute  
of Technology  
Cranfield, Bedford MK43 0AL







## MYRIAD

## DATA PROCESSING MANAGER

S.E. LONDON IBM SYSTEM 34 C. £7000 + PROFIT SHARING

Reporting to the Financial Director, this position offers an ideal opportunity for a person wishing to accelerate their career into a managerial role.

Applicants will have gained a sound understanding of RPGII in a System 34 environment and should display the personality to motivate a small data processing department. A knowledge of System 34 procedures will be a distinct advantage, but equally important, is the ability to promote the D.P. functions within the company.

The company produces a range of household products and are proud to be market leaders in their field. Operating from modern offices in S.E. London, they have a strong customer base throughout the world with a turnover of £5 million.

The negotiable starting salary is enhanced by a profit sharing scheme, a pension scheme, free BUPA, 4 weeks' holiday and a staff restaurant. Additionally, the D.P.M. will receive a COMPANY CAR after a qualifying period.

Ref. S2/2033

MYRIAD APPOINTMENTS LIMITED Computer Personnel Consultants  
Telephone or write to:- 30 Fleet Street London EC4Y 1AA 01-353 0981 (24 hrs)

## SHIFT SUPERVISORS

ICL 2960 LUTON c. £5000

Laporte Industries require two Shift Supervisors to lead shift teams who will operate their ICL 2960 running under DME.

These are responsible positions reporting to the Operations Manager. In addition to team leadership the Supervisors will be able to control and schedule the computer.

Candidates should possess four years' ICL G2/G3 experience, two of which have been in a supervisory role. A knowledge of data control procedures would be an advantage.

Conditions of employment include four weeks' annual holiday, non-contributory pension fund and generous assistance with expenses if relocation is necessary.

Applications, in writing, to Group Personnel Manager, Laporte Industries Limited, PO Box 8, Kingsway, Luton, Beds., or telephone Luton 21212 Ext. 331 for an application form.

Closing date for applications 12th April 1979.



**LAPORTE INDUSTRIES LIMITED**  
PO Box 8, Kingsway, Luton, Beds. LU4 8EW.

MEDWAY BOROUGH COUNCIL  
**SENIOR ANALYST/PROGRAMMER**  
(3120)

£6,531-£7,327 p.a. inclusive  
\*including Shift Allowance  
(Salary may be increased up to a maximum of £8,343, upon performance appraisal, after a period in post.)

This new post, reporting directly to the Computer Manager, is needed to lead one of two small teams involved in furthering the Council's computer development programme. The existing 2903, with ED560's and MT's, will be enhanced to 2904 within the next few months to handle a wider range of applications and on-line systems.

The computer section is based in Chatham Town Centre, with excellent shopping facilities and good road and rail links to London, the Kent countryside and coast.

\* Shift working by the programming staff is used to provide software support for the operators between 7.30 a.m. and 7.30 p.m.

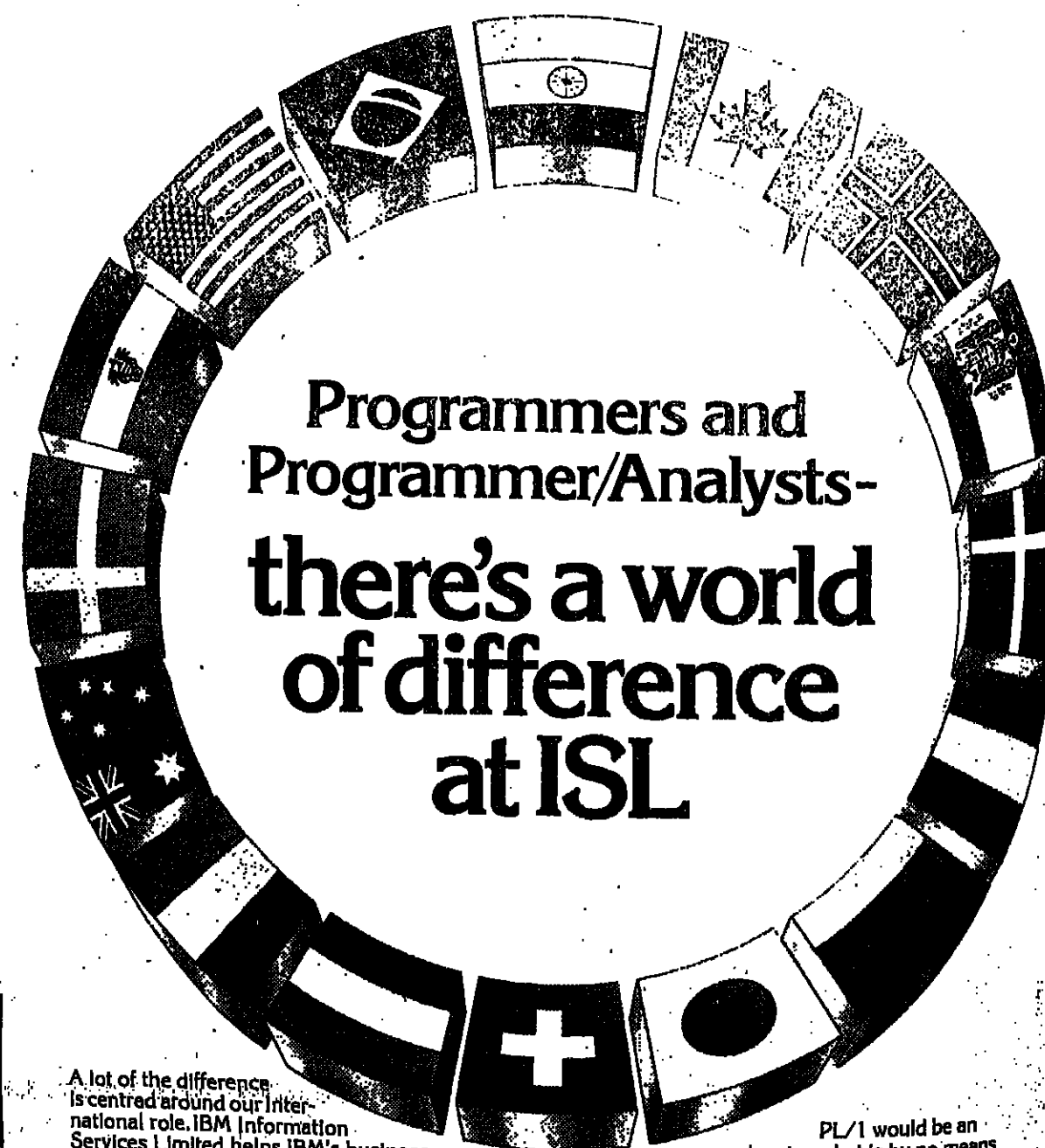
Housing accommodation, 100% removal expenses and generous assistance with relocation expenses may be given in appropriate cases.

For application form etc. contact: Personnel, Council Offices, Frindsbury Hill, Strood, Rochester, Kent ME2 4HR, telephone: Medway (0634) 79831, ext. 22 or, for further details, telephone Mr. Bourne or Mr. Fowler on Medway (0634) 402020.  
Closing date: 17th April, 1979.

UNIVERSITY OF STRATHCLYDE  
Applications are invited for a  
**SENIOR COMPUTING OFFICER**

In the COMPUTER CENTRE 'Applicants will normally have a University degree or equivalent qualification and will have had considerable programming experience preferably including some element of supervisory responsibility. The successful candidate will be concerned mostly with software and/or hardware aspects of data communications and with the development of computer systems. Knowledge in this area, while desirable, is less essential than interest. The University has an extensive campus communications network and the Universities of Strathclyde, Edinburgh and Glasgow are linked by 6000 communications lines with nodes at each site. Network arrangements give access to local systems (ICL 1900S, Honeywell H6000, CTR, front-end processors), to ICL 2980 and 2870 systems in Edinburgh and Glasgow and to IBM systems at Newcastle.

Applicants will be on Grade II of the national salary scale for other related staff. Salary scale £5,317 - £7,754 (under review with rising according to qualifications and experience. Superannuation benefit. Applications should be sent to the Personnel Officer, University of Strathclyde, Royal College Building, 224 George Street, Glasgow G1 1RN, with whom applications should be lodged by 1st April, 1979.



A lot of the difference is centred around our International role. IBM Information Services Limited helps IBM's business run smoothly in over 20 countries, backed by one of the largest and most advanced DP installations in Europe.

We process a large part of the company's European order scheduling information and also provide online services and data banks on a worldwide basis by means of direct teleprocessing lines.

As one of our Programmers or Programmer/Analysts you'd be at the heart of this operation in design, development, install and maintain International applications systems and on occasions travelling abroad to meet and help your colleagues on the spot.

We are updating and extending both our hardware and software capabilities and this continued expansion gives plenty of scope for diversification and progression.

Right now we're looking for determined men and women with 3 years' programming experience, a proven interest in applications and analytical minds.

## COMPUTER OPERATOR

The Society, which has an IBM 370/148 installation (to be replaced by 4341 CPU's), requires an experienced Operator, male or female. He/she is expected to have a minimum of twelve months' experience of DOS/POWER/CICS/VS together with a knowledge of JCL and utilities.

A thru shift system is worked for which an allowance is paid, and a competitive salary and attractive fringe benefits, including concessionary mortgage facilities, will be offered. There will be promotion opportunities in the Department within the near future.

For an application form contact:

Personnel Department, Bristol & West Building Society, Head Office, P.O. Box 21, Broad Quay, Bristol BS99 7AX. Tel: 284271 Ext. 343.

**Bristol & West BUILDING SOCIETY**  
A MEMBER OF THE BUILDING SOCIETIES ASSOCIATION

## TRAINING OFFICER

In recognition of the complexity of the Data System Division at Chelmsford, it has been decided to appoint a Training Officer to the Division.

The Training Officer will report to the Divisional Manager at the Data Systems Division, and be responsible for satisfying all the division's training needs.

Duties will include taking direct charge of all new programming staff, during their initial period prior to being assigned to specific areas, and organising all external training. This will involve liaison with the Training Department, Marconi College, Universities and the Staff Development Centre, as necessary. In addition, the man or woman appointed will be required to identify areas where supplementary internal courses are required, and will be responsible for organising them.

The successful candidate will probably be qualified to at least Senior Analyst Programmer level, and have experience of lecturing and instructional techniques. A thorough appreciation of systems software and hardware techniques is essential.

In addition to a highly competitive salary, a comprehensive range of benefits, including relocation expenses in approved cases, is being offered.

Please apply in writing, (quoting reference BW 111), giving details of career and experience to date, to Bernard Walsh, Marconi Radar Systems Ltd., Freeport, Chelmsford, CM1 3BR. Tel: Chelmsford (0245) 67111.

## D.P. MANAGER/ANALYST

Slough

Salary 7K-8K neg. + car

Our client is a medium-sized, expanding organisation with a proven sales/marketing record and consistently high growth rate.

To complement the management effort and contribute to organisational success, they require a manager. You will probably be c30 years with a proven computer understanding and will be able to contribute now in a "shirt sleeve" environment and in the future in line with company growth. This is an excellent opportunity for an experienced person to move into management within a progressive company.

For further information please contact  
**CHEN WARWICK**  
OPEL House  
123 London Road  
Camberley, Surrey  
Tel. Camberley  
61261/61120



## COTSWOLD DISTRICT COUNCIL

## DATA PROCESSING OFFICER

Salary £4325 - £4832 p.a.

This newly established post will involve the control and supervision of the operations and data processing of the Council's computer installation, and will suit someone with operating experience (preferably on Honeywell machines) who wishes to extend their level of responsibility and job interest.

Currently installed is a Honeywell 2020 with input and data running under MOD 1 MSR, but this is being replaced in the next 18 months by a Honeywell Level 6.

The installation is run on a one shift day and a system of flexible working hours is in operation.

Application forms are available from the Director of Finance, 11 Goodrich Street, Cirencester, Glos. (Telephone Cirencester 5767 Ext. 2/2) and further details can be obtained from Mr. Brierley (Ext. 274).

## THORBAR

RECRUITMENT AND CONSULTANCY SERVICES

Greenock House, 19 Cuckfield Road, Hurstpierpoint, Sussex

Telephone: 0273 833848

## SPECIALISTS IN DP AND EXECUTIVE RECRUITMENT.

West London/Middlesex  
**SENIOR PROGRAMMERS COMM. SALARIES C. £7500 P.A.**  
**PROGRAMMERS**  
+ Attractive Fringe Benefits

Cobol - PL1 - Basic - Fortran

NEW DEVELOPMENT BASED ON LARGE MAINFRAME AND MINI  
COMPUTER HARDWARE UTILISING THE LATEST RELEASES OF  
SOFTWARE AND D.P. TECHNOLOGY IN A REAL TIME ENVIRONMENT

A major U.K. group is undergoing considerable new development and to meet the needs for 1979 and the future, they intend to appoint a number of Senior and Semi-Senior Programming Personnel who are interested in working within a challenging role and able to take responsibility for providing Software for a variety of commercially based systems.

These are attractive opportunities for people who can portray the following levels of ability and interests:

1. Programming experience in any language, having worked with large, medium or mini computer hardware.
2. You will be prepared to undertake varying levels of responsibility as required.
3. We would expect you to be career conscious and looking for progression.
4. Full training is provided where necessary by our clients.
5. There are opportunities for you not only to progress within a D.P. environment but also to move into line management positions in the future.

PLEASE WRITE TO US OR TELEPHONE TO MAKE IMMEDIATE ARRANGEMENTS FOR INTERVIEWS  
TO TAKE PLACE IN EITHER LONDON OR THE SOUTH

**IBM**  
Information Services Limited

## DATA PROCESSING STAFF REQUIRED FOR EMPLOYMENT IN KUWAIT

£9,000 up to £17,000 PA. (total remuneration package).

## DATABASE SOFTWARE SPECIALIST

At least 8 years' professional DP experience. Currently specialising in the technical implementation of a CODASYL based Database concept in a large company, specifically in the areas of physical design, software tuning, TP interface and security.

## SYSTEMS ANALYSTS

At least 6 years' professional DP experience covering programming, systems design and systems analysis in a large ICL 1900 installation. Preference will be given to analysts with proven experience of seeing projects through from feasibility to implementation. Experience of large on-line applications would be advantageous.

## PROGRAMMING STAFF

At least 5 years' professional programming experience on ICL 1300 and currently proficient in George III and COBOL. Experience of leading a team of programmers is required for the more senior posts. A knowledge of FORTRAN and/or FILETAB/FTL 6 would be advantageous.

The group is multi-national currently employing over 100 staff and is developing on-line and database applications on one of the largest ICL installations in the Middle East (Twin 1904S under George 4). The Group is actively investigating potential 4th generation replacement configurations.

Applicants should preferably be graduates or possess a professional qualification with substantial experience in their respective fields. The willingness and ability to train and develop less experienced staff in the Group is essential. The total remuneration package consisting of basic salary, cost of living allowance and annual service benefit will be paid locally in Kuwaiti Dinars. Local salaries are at present tax free and are fully transferable.

Successful applicants will enjoy 42 days paid leave per annum with paid passage to their country of origin. Air-conditioned accommodation, or an allowance in lieu, free medical attention, primary school facilities with assistance towards education, will also be provided.

Write or telephone Susan Byrne at the number below, or if it would be more convenient call her outside office hours on Wythall 823372.

**WARWICK WOODWARD ASSOCIATES**  
4th floor Scala House Holloway Circus Birmingham B1 1EQ Telephone 021 643 8981

April 1979



## PERFORMANCE ANALYST

COMTEN is a well established computer performance measurement products firm based in the United States with offices worldwide. We are presently expanding our London office with the addition of two Performance Analyst trainees.

Analysts will work with our Dynaprobe Hardware Performance Monitor systems in primarily a sales and customer support environment. In addition, there is the occasional opportunity to conduct hardware monitoring studies as a consulting service to clients.

Successful applicants will spend 4 to 6 weeks at our International HQ in the USA undergoing formal training, followed by on the job training with experienced members of the London staff.

If you have two or more years' experience working with medium scale computer systems in programming, support, operations or hardware maintenance, you are a potential candidate.

Salary negotiable up to £6,000 p.a. based on experience.

Please write or call, giving career resumé, to:

**Max Mahanke, General Manager**  
COMTEN (Performance Systems) U.K. Ltd.  
23/24 Great James Street  
London WC1N 3ES  
Tel: 01-405 0085

 **COMTEN**  
(Performance Systems) UK Limited

## M700 Be F100-L at the front selling Ferranti Microcomputers

### The Products

The Ferranti range of microcomputers includes the F100-L single chip 16-bit bipolar microprocessor and the bit-slice based ARGUS M700.

The exceptionally versatile F100-L is established across a wide variety of both civil and military applications and, with its expanding range of support chips, is now entering volume production with £95,000 approval becoming available. F100-L is supported by both high level (CORAL 66) and low level (Assembler) support software which is available in both cross product and resident forms, the latter running within an F100-L Microcomputer System.

ARGUS M700/20, the first military LSI version of the successful Ferranti ARGUS 700 range of real time computers, is specifically designed for hard environment applications within all three armed services. M700/20 uses state-of-the-art bit-slice elements and further members of the range will benefit from the extensive use of advanced Ferranti LSI techniques.

### The Job

An expansion of sales effort is now necessary to handle both the increased product range and the high level of customer interest that has been shown. This has led to vacancies for SALES ENGINEERS based at Bracknell in Berkshire.

Successful applicants, male or female, will be responsible for the continued expansion of our customer base, both at home and abroad, and for further liaison with existing customers.

Opportunities also exist for participation in seminars and exhibitions.

### The Person

Applicants should possess either a degree or HNC in a relevant subject and have had at least 2 years' involvement with either computers or microprocessors.

Experience in hardware and/or software techniques is required. Applicants should have a working knowledge of the other discipline. Selling experience is not necessary as appropriate training will be given, but the ability to establish a professional relationship with customers is essential.

### The Reward

A salary will be paid commensurate with the importance attached to these positions. The overall package will include overtime allowances, a company car, a productivity bonus scheme and the other usual benefits of working with a large company.

### Apply to:

Personnel Recruitment,  
Ferranti Computer Systems Limited  
(Bracknell Division)  
Western Road  
Bracknell, Berkshire.  
Please quote reference D/908/CW

**FERRANTI**  
Computer Systems

## Systems Specialists with Database and Data- Communications experience

## In Holland you can earn £12,000-£15,000!

### Experienced DB/DC Specialists

You should have experience of a high level language and at least 5 years mainframe systems experience, preferably with IBM 370-OS. Database and Data Communications expertise is essential. You should be skilled in CICS, IMS, MVS, or VM. If you're no more than 32 years old, then you could be the person we're looking for. We can offer you many opportunities for extending your knowledge and experience to fit the changing demands of the 1980s. This means real career progression for you. The salary you'll receive in Holland will be the equivalent of between £12,000 and £15,000.

## Cobol Programmers In Holland you can earn £8,000-£12,000!

### Cobol Programmers

You should have at least 3 years IBM Cobol experience, preferably with OS/DOS, JCL. We need you to join our team of Cobol coaches, who give individual programming instruction on our courses given by our education department. We will give you 2 months training to acquaint you with our programming standards. The salary you'll receive in Holland will be the equivalent of between £8,000 and £12,000.

## Volmac: Holland's Leading Software House

Our twelve years in the business have taken us to the top. And we're still growing. By ensuring that all our 400 employees are of the highest standard, and by our quality of service, we've earned ourselves an enviable reputation. This means that those able to meet our requirements are the best paid software specialists in the Netherlands. Volmac's headquarters are in Utrecht, and we have 11 branches throughout the Netherlands.

### A permanent and fascinating job in Holland

You'll have all the advantages of being directly employed by Volmac. This means you'll pay Dutch income tax, which at these salary levels is less than British tax. You'll also be coming to live in the Netherlands. If you're a married man, you'll be bringing your wife too. Volmac will help with your removal and contribute towards the cost. We'll give you a company car and generous expenses. What's more, you'll have paid holidays of up to 27 days a year.

## RING 01-723 12 77

If you have the necessary knowledge and experience, this is your chance to profit from it. A Volmac executive - Mr. Jan van Wensen - is currently in Holiday Inn Hotel London Marble Arch, George Street, London W1H6KN, where he'll be pleased to interview you. Ring 01-723 12 77 for further information and to make an appointment. The final step will be a visit to Volmac in the Netherlands, at our expense. Full-scale interviews there will show whether you and Volmac suit each other. You'll be made an offer immediately.

Automation Centre "Volmac" B.V.  
P.O. Box 2575, 3500 GN UTRECHT,  
The Netherlands  
Our London representative is on 01-723 12 77.

**VOLMAC**

## Systems Analysts Software Designers COBOL Programmers Consultant Analysts Systems Designers Project Managers

# A chance to spread your wings

## Herts, Cheshire & London. £5000-£9000

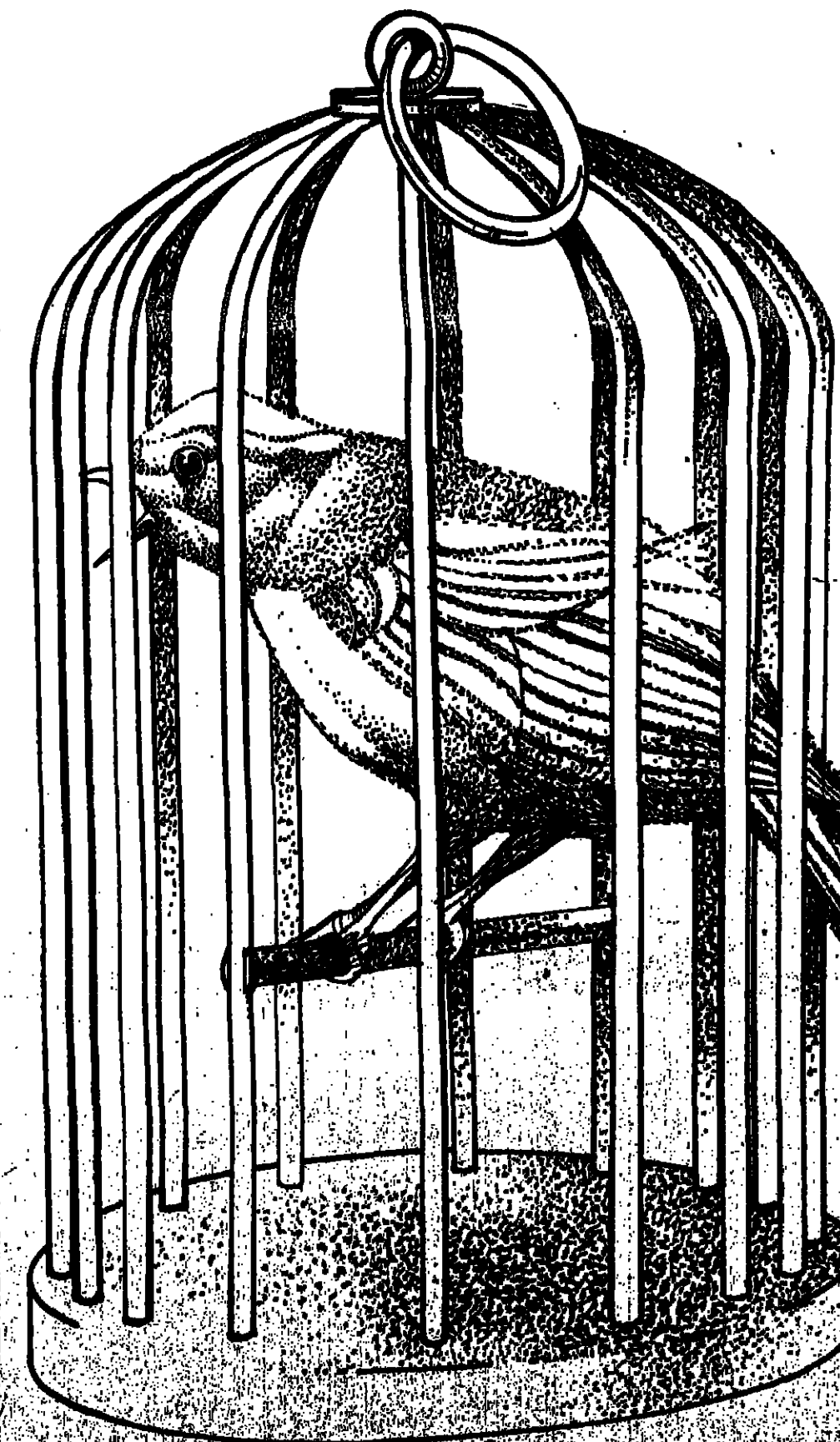
1978 was another extremely successful year for ICL, turnover was up by 22% to over £500m, with over half the business coming from overseas.

This kind of success offers a tremendous challenge to the team who provide our internal company systems world-wide - and our development plan, with a £multi-million budget, means that we now have opportunities that will appeal to ambitious computer professionals who expect rapid career progression as well as job satisfaction.

**2900 Training** A feature of our development plan is the introduction of a world-wide systems network based on an impressive range of hardware from ICL minis, such as System Ten and the 1500 series, through to very large 2900s. We operate a training plan which will enable you to transfer from 1900 to 2900 easily.

**Project Variety & Travel** Since ICL operates in 80 countries worldwide, international travel is a possibility as is the chance for longer term overseas assignments. There is also tremendous project variety, with the chance to specialise in systems software, pure systems development or maintenance and user support.

**Career Development** But perhaps the greatest attraction is the opportunity for career development. Working for a computer manufacturer means that you could make career moves into functions such as marketing, finance, or technical support, or perhaps consultancy with our subsidiary Dataskil, Europe's leading software house.



We have vacancies in Stevenage, Letchworth, Manchester, Kildersleepe and Putney. We would like to hear from you if you have experience in some of the following areas:

## Commercial Applications

- ICL 1900 or 2900 COBOL
- GEORGE III VME/B
- IDMS
- Real-time systems
- Production and Manufacturing systems
- Marketing and Finance systems
- Engineering and Spares systems

## Systems Software

- Diagnostics
- Construction of VME/B systems
- Large systems design and programming standards
- VME/B Superstructure products and systems programming
- Networking software
- TP systems software and applications
- Filestore control and data-administration

**Your action!** We will be holding interviews over the next two weeks, so write now giving brief career details to: George Battersby, ICL Recruitment Services, 93/99 Upper Richmond Road, London SW15, or if you require further information telephone him on 01-788 7272 ext. 4179. Please quote reference CW1330.

## International Computers

think computers - think ICL

**ICL**

01-723 12 77



Memorex Europe Limited has the following vacancies:

## System 3 Support Specialist

To join the European Technical Support Group based in our European Headquarters in West London.  
The successful candidate will have at least four years' experience in an IBM system 3 environment with an in-depth knowledge of the system 3 control programs.  
The specialist must be able to communicate well with customer personnel at all levels, design staff on Memorex products, and senior management within the Company.  
The position offers opportunities to travel throughout Europe and the U.S. and carries an attractive salary and benefits package, and excellent prospects.

## Small Systems Instructor

To work at our Engineering Training Centre located in the Heathrow area. The Instructor will join the European Training Group who provide an education programme for the Memorex engineers working at all our European operations.

Suitable candidates will have 3-5 years' practical mini-computing experience, preferably on IBM system 3 or equivalent, 1-2 years' teaching experience would be an added advantage.

A special instructors' compensation programme will apply and benefits include an excellent company pension scheme, free life, assurance and BUPA cover.

Please write or phone for an application form:  
Helen Smith, Memorex Europe Limited  
730 London Road, Hounslow, Middlesex TW2 1PD, 01-572 7381.

MEMOREX

UNIVERSITY OF  
NOTTINGHAM  
CRIPPS COMPUTING  
CENTRE

Applications are invited for the posts of  
**SENIOR SYSTEMS  
PROGRAMMER**  
and  
**INSTALLATION  
ENGINEER**

The University has a linked 1804S/1808A configuration, integrated with a packet switched network, comprising two PDP11/40's (for data preparation and editing), and a Modular One (to provide interactive BASIC), a Facsimile PDP11/34 (providing on-line access and file transfer facilities for remote users) and a PDP11/34 switching node (providing access to EPSS and later to departmental mini computers).  
The Centre is also actively participating in the development of a new regional network which will fully interconnect the main computing systems of the six midland Universities.

For the first post, experience of either PDP11 or 1800 Series 3-4 systems is essential. Applicants should normally have a good honours degree or equivalent experience.

For the second post, an experienced engineer with an interest in software is sought as a basis in the handling of development problems encountered during the extension of the system. Applicants should have at least HND, although a degree is preferred, and should also have at least two years' relevant experience.

For both posts the initial salary will be in a single up to £5,556 p.a. (under review), with USS, according to qualifications and experience.

Further particulars and forms of application, returnable not later than 13th April 1979, from Staff Appointments Officer, University of Nottingham, University Park, Nottingham NG7 2RD. Tel. No. 578.

# Manager or Team leader?

We are looking for some good Managers.

We know they will be expert at solving problems, pre-empting crises and handling exacting staff and customers.

We want them to STOP doing all those delightful things and concentrate instead on getting to grips with microprocessors.

At Marconi Avionics we are using microprocessors in all our projects: singly, in pairs, clusters, networks and, occasionally, in multitudes.

We will provide the training, but we are looking for some really expert problem solvers who can tackle a large number of one-man or two-man

projects. Not who can just manage but who can really tackle, design and write code and work hands-on with our engineers to get the systems working.

To find out more about this challenging opportunity ring Ian Smith on 01-953 2030, ext. 3787.

Alternatively, please write to H. E. Batchelder, Marconi Avionics Limited, Elstree Way, Borehamwood, Herts. Please quote reference MA 79036.

These posts are open to both men and women.

**MARCONI  
AVIONICS**  
A GEC-Marconi Electronics Company

## Computer Manager

The Public Health Laboratory Service Board invites applications from suitably qualified candidates with enthusiasm and drive for the position of Manager to take charge of a newly formed Data Processing Unit.

The Board provides a microbiology service at the Central Laboratory throughout England & Wales, at 52 laboratories, Colindale NW9, and from 1 April 1979, at the Laboratory for Applied Microbiology & Research, Porton Down, Wiltshire. A number of computer projects already operate and these are to be brought under centralised control together with future developments. A CTL computer is now being installed at Porton Down.

The Manager will be responsible for planning the development of a coherent, organised service. He/she will be based at Colindale though at first, during the commissioning and programming of the new computer, much time will be devoted to the unit at Porton Down.

The successful candidate is likely to be a graduate with sound experience of modern computing methods. He/she, while responsible to the Board's Headquarters officers, will work with senior scientific and medical staff of the different units.

The appointment will be under NHS terms and conditions of service with a salary on scale 23, £3855-£5423 plus 25% London Weightings.

A copy of the job description may be obtained from: Dr. R. A. Bassett, PHLS Board, 81 Colindale Avenue, London NW9 5EQ (Tel. 01-200 1295) to whom applications with full career details and names and addresses of three referees should be sent by 23 April, 1979.

PHLS

Public Health Laboratory  
Service Board.

**Gwent**  
County Council

COUNTY TREASURER'S DEPARTMENT - COMPUTER SECTION

Gwent is a pleasant county in which to live. There is easy access to the motorways and the high speed rail systems. There are sporting and leisure facilities to suit all tastes from aerobic pursuits such as sailing, to walking in pleasant countryside. We have an IBM 370/148 with 3360 disk storage and take pride in being in the forefront of computer development. Plans have been made to replace the existing equipment. Decisions have been taken to extend the present on-line cash receipting and V.D.U. applications to take us into the 1980's.

Applications are invited for

## SYSTEMS ANALYST/ PROGRAMMERS

On Grade SO 1/2 (£2,211 p.a. - £6,060 p.a.). These people will join existing teams dealing with a wide variety of applications. The main programming languages are PL1, Assembler and Fortran. Candidates should be suitably qualified and a minimum of five years computing experience is desirable. Generous assistance will be given towards removal, legal expenses, etc.

Application forms available from the Personnel Officer, County Hall, Cwmbran, Gwent NP44 2XH should be submitted by Thursday, 19th April, 1979.

## Opportunities for DATA PROCESSING AND O & M PROFESSIONALS

The Leeds Permanent Building Society is seeking to recruit experienced Data Processing and O & M personnel to join the Management Services team at its Leeds Head Office. A number of new and exciting projects are now being planned and additional staff are required to assist in their development. The projects will be concerned with both Branch and Head Office operations, and the latest computer technology and office equipment will be employed.

**BUSINESS SYSTEMS DEVELOPMENT:** (Ref.BSD) Systems Analysts and O & M Analysts with at least two years experience and who have received some formal training are invited to apply. They will join the Systems and Procedures Department which operates on a basis of multi-disciplined projects. The successful applicants will have the opportunity to gain a wide understanding of all management service techniques, and to relate them directly to the Society's business requirements.

**COMPUTER DEVELOPMENT:** (Ref.CD) Technical designers and programmers with at least two years experience gained in an IBM installation are invited to apply. The positions offered in the Computer Development Department will provide the technical challenge associated with the sound design and development of advanced computer systems.

The Society offers a progressive salary together with a staff cottage scheme, pension, life assurance and sickness benefits, subsidised staff restaurant and sports and social facilities. Good promotion prospects are available to the right people.

Interested applicants should write briefly or telephonically an application form, quoting the appropriate reference to: J. Clark AMBIM, Personnel Manager, Leeds Permanent Building Society, The Headrow Leeds LS1 1NS. Tel: Leeds (0532) 38181 ext. 448.

**The Leeds  
PERMANENT  
BUILDING SOCIETY**

ONE OF THE  
BIG FIVE

## MYRIAD

# DO YOU WANT REAL ANALYTICAL INVOLVEMENT?

## WATERLOO

£6500-£7500

Our client is about to embark on a schedule of development which, based on the newly installed mainframes at their London Data Centre, will provide additional and more technologically advanced computing facilities for user groups.

This creates the need to appoint a Systems Analyst who will, with a team of professionals, undertake the development of a Distribution System. The aim of the project team is to design and implement a system to bring optimum flexibility to users and provide ordering and distribution procedures that will ultimately result in even greater sales efficiency for the company.

The successful candidate for this challenging position will display sound experience in commercial systems design and will be actively seeking the opportunity to gain more depth of analytical involvement and total project responsibility.

In addition to an excellent salary and benefits the company are able to provide real career progression in a stimulating and professionally rewarding environment.

Ref: SE1/2903

MYRIAD APPOINTMENTS LIMITED Computer Personnel Consultants  
Telephone or write to:- 30 Fleet Street London EC4Y 1AA 01-353 0981 (24 hrs)



OLYMPIC HOLIDAYS LIMITED

## DATA PROCESSING MANAGER

Olympic Holidays, Britain's largest tour operator to Greece, require a Data Processing Manager for their London office.

Reporting to the Finance Director, the person appointed will, with the assistance of a small staff, be responsible for the continuing effectiveness of the present data processing department and the future development of services within an expanding organisation.

The company's data processing is carried out on its own DEC PDP11/34 using Basic 4 and applicants will need to demonstrate their ability to work with this equipment.

Ideally, candidates will have had experience in a computer department, either at managerial or senior level.

Commencing salary will be up to £7,500, plus bonus, BUPA membership and travel concessions.

Please apply with brief but adequate details to:

W. E. Dyer, Finance Director  
Olympic Holidays Limited  
24/28 Queensway, London W2

## COMPUTER ENGINEERS

On April 26th, 1979, a recruitment feature highlighting careers within the computer engineering field will be published.

To advertise in this important feature contact:

EDDIE FARRELL  
on 01-261 8097

## \*ANALYST/PROGRAMMER\* with \*PLAN & COBOL\*

Permanent or contract for immediate start to work with our existing project teams implementing manufacturing systems, initial 6 months assignment in North London. Contact: Gold or R. Carr on 01-388 0089.

FRASER WILLIAMS (LONDON) LTD  
38 Watney Street, London W1P 8PD

**Fraser Williams  
Computer Consultants**

# Scientific/ Engineering Programs

We are looking for someone to design scientific and engineering programs for our Operations Engineering group based at Heathrow Airport. This group is involved in many key aspects of the airline's current and future activities, and has specialists in aircraft performance, weight and balance, noise and vibration, aircraft evaluation and other related disciplines.

Starting pay (currently under review) will be £5777 p.a. (rising to £6771).

Other benefits associated with a major international airline apply, including an index-linked pension scheme, subsidised cafeterias, extensive sports and social facilities and favourable holiday travel opportunities.

For an application form please telephone between 9 a.m. and 4 p.m. quoting reference 887/CW/RM, or write on a postcard to: Recruitment and Selection, British Airways, PO Box 10, Heathrow Airport - London, Hounslow, Middlesex.

Applicants should be graduates in Mathematics or Computer Sciences with 4-5 years' experience of designing scientific/engineering computer systems using ALGOL, on an ICL 1906S operating under

**British  
airways**

## BUREAU ENGINEER

An experienced person is required to undertake the day to day maintenance of equipment in the Radar Company's Computer Bureau. The equipment comprises of: 8100s 16's, 2 Elliott (8008), 3 Myriad Systems, displays and a Prim Programmer. The post will entail organising the equipment, configuration changes, modifications and the incorporation of new equipment, including interfaces to the new 4070 computer.

The successful candidate (male/female) will be expected to have 2-3 years' experience in maintaining DP equipment as well as a good background knowledge of digital computing, machine architecture, principles of machine operation, computer peripherals etc. Finally an ability to liaise with outside organisations with reference to maintenance contracts, repairs etc. will be an advantage.

In addition to a highly competitive salary, a comprehensive range of benefits, including relocation expenses in approved cases, is being offered.

Please apply in writing (quoting reference BW113), giving details of career and experience to date, to Bernard Walsh, Marconi Radar Systems Ltd, Friespost, Chelmsford, CM1 5BR. Tel: Chelmsford (0248) 57411.

Apply to: A.S.D.

**Fraser Williams  
Computer Consultants**

Planning and Transportation

## Technical Programmers

£3732-£4632 p.a. inclusive

The Technical Computing Group provides an advisory and programming service to the Department. The range of work is very wide and includes road and bridge design, traffic accident analysis, traffic survey analysis, planning applications, and highway maintenance monitoring. Database techniques are already in use and it is planned to considerably increase their use following the installation of a 2960 and 2972 under VME/B over the next year. The Department has its own graph plotter and digitiser, and accesses the current ICL 1904S via VDUs.

Applicants (male or female) must have a formal education to at least 'A' level standard, a minimum of 1 year's programming and enjoy dealing with non-computing professionals. Experience is already in use and it is planned to considerably increase their use following the installation of a 2960 and 2972 under VME/B over the next year. The Department has its own graph plotter and digitiser, and accesses the current ICL 1904S via VDUs.

Applicants (male or female) must have a formal education to at least 'A' level standard, a minimum of 1 year's programming and enjoy dealing with non-computing professionals. Experience is already in use and it is planned to considerably increase their use following the installation of a 2960 and 2972 under VME/B over the next year. The Department has its own graph plotter and digitiser, and accesses the current ICL 1904S via VDUs.

Assistance will be given with the expenses incurred in moving house in accordance with the Authority's Scheme.  
Application forms can be obtained from the Director of Planning and Transportation, Trent Bridge House, Fox Road, West Bridgford, Nottingham, telephone Nottingham (0802) 868585, ext. 366. If you wish to discuss the posts informally, please speak to Dave Aldisworth on ext. 392. Closing date April 9th, 1979.

**Nottinghamshire  
County Council**  
County Hall West Bridgford  
Nottingham NG2 1RP

# Systems Manager

c.£10,000 - Reading

Thames Water, which manages all water services for some 12 million people, is the largest operation of its kind in the world. It makes extensive use of the latest computer technology and its Reading establishment is currently replacing existing ICL 1900 systems with a distributed processing network. This will comprise a large mainframe computer with linked processors at a number of locations to provide both conversational and bulk transmission services.

A Systems Manager is now to be appointed to be responsible for leading a team of about 20 systems analysts and programmers on many applications, with the major effort on financial systems. Responsibilities also cover identification of system needs, the creation of development schedules and resource plans, and the ability to negotiate these with a variety of user groups.

He/she will be conversant with the needs related to personnel development including the recruitment, training and review of systems and programming staff. Generally, the Systems Manager will work in close liaison with the Head of Computing providing regular reports on projects and resources in addition to identifying and selecting new technology to support our overall computer strategy.

This appointment calls for a man or woman, aged at least 30, with a good degree and a proven ability in managing a systems conversion project. The applicant will have at least 3 years' experience in management, have successfully developed and implemented a number of large computer systems (some including remote computer networks) and possess knowledge of database and communications software.

Salary will be within the range £9,645 - £10,371 plus an excellent benefits package. If the challenge of managing in a major data processing investment interests you, write or telephone for an application form to Assistant Director (Personnel-Staff), Thames Water Authority, New River Head, Rosebery Avenue, London, EC1R 4TP. Telephone: 01-837 3300 Ext. 2024.

Closing date for receipt of applications: 17th April 1979.

## Thames Water

# C E MANAGER LONDON - c £7000 + Car

We seek an experienced Computer Maintenance Engineer to manage our UK maintenance operation. The successful applicant will have wide experience of computer equipment and will be able to demonstrate managerial ability.

Remuneration package includes generous fringe benefits. Periodic visits to our Toronto based research department will arise.

This is an exceptional opportunity for the right man to join our fast expanding company.

Please apply with resume to:  
The Engineering Manager, GEAC Computers Limited, 80 Stokes Croft, Bristol BS1 3QY. (Or call reversing charges 0272 426811).

## COMPUTER SALES EXECUTIVE £12K BASE + VOLVO

This Dynamic American Company has just opened two new Sales Regions in U.K. and Europe and is looking for young Salesmen with Management potential to spearhead the attack in these territories.

Whilst experience of IBM mainframe (or PCM equipment) would be a distinct advantage candidates with a successful record in the computer field would be considered.

TOP SALARY - TOP COMMISSION - TOP CONDITIONS

Phone VERA for an interview THIS WEEK.

**KEY COMPUTER PERSONNEL**  
01-949 5851

## GREATER MANCHESTER

**SYSTEMS ANALYST** to £7000  
ICL 1900 Installation based in South Manchester. Develop an on-line order entry system. Should have a COBOL programming background.

**ANALYST/PROGRAMMER** £5500+ Car  
ICL 2904 installation. Ideally should have both programming and systems experience, but would consider person with 3 years' COBOL experience. On-line knowledge helpful.

**CONTRACT PROGRAMMERS  
& ANALYSTS** to £350 p.w.  
Greater Manchester - RPG2 Programmer/Mark IV Programmers/MUMPS Programmers/Business Systems Analysts (IBM/UNIVAC/HONEYWELL). Overseas - Europe - IBM Programmers (COBOL/RPG2/PL1). Saudi Arabia - 4 x IBM COBOL Analysts/Programmers (tax-free salary, free accommodation, etc.).

To register for these and many other vacancies, please contact Alan Brown (Computer Recruitment Consultants), SENIOR APPOINTMENTS COMPANY, 2nd Floor, Coronation House, Andale Centre, Market Street, Manchester. Tel. 061-832 4363.



Telephone or write to:- 30 Fleet Street London EC4Y 1AA 01-353 0981 (24 hrs)

# Lovell

For further information call Julia Roth on 01-637 9111  
or write, quoting reference MEO/6 to Logica,  
FREEPOST 21, London W1E 4JZ.

Applicant's name (128) Mr. R. L. Stephenson  
Applicant's Office: University of Tennessee, Knoxville, TN 37996  
Applicant's Address: 1288 N. 1st St., Knoxville, TN 37903  
Applicant's Phone: 423/243-1111  
Applicant's Fax: 423/243-1111  
Applicant's E-mail: rsteph@utk.edu  
Applicant's Date: 12/12/1978



**CONTRACTORS**  
(or those considering contracting)

## PDP11 PROJECTS

Banking  
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If you have sound commercial, technical or scientific experience on any of the following operating systems or languages, register now for current and forthcoming contracts.

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We require high-calibre Programmers, Analysts and Project Leaders/Managers for short and long term assignments both in the U.K. and Europe.

We set a high standard for our PDP Specialist Contractors and pay top rates.

Send your C.V. immediately or ring J. N. Fort for full details or advice on contracting.

P.S. (We also have numerous requirements for IBM, ICL and Univac COBOL Programmers).

REF: 539/1

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SPECIALIST RECRUITMENT CONSULTANTS

INTERNATIONAL BANKING  
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CIRCA £8,250 p.a.

PLUS AN EXCELLENT PACKAGE OF BENEFITS INCLUDING SUBSIDISED MORTGAGE, NON-CONTRIBUTORY PENSION, FREE LIFE ASSURANCE, FREE LUNCHES, PERSONAL LOANS, ETC.

PROJECT MANAGEMENT RESPONSIBILITY  
THE ABILITY TO "START UP" PROJECTS FROM FEASIBILITY

Our Clients are one of the largest International Banking Groups worldwide. On-going development of their DEC PDP11 based Real Time Banking Systems has lead to this excellent career opportunity.

Candidates should have experience of starting up small projects from feasibility stage and managing them through to implementation. The ability to interface well with the user departments is important as is the ability to manage perhaps two or three small projects simultaneously. Experience in a Banking or Financial environment, although not a prerequisite, would be an advantage.

THIS IS AN EXCELLENT OPPORTUNITY AND FURTHER DETAILS MAY BE OBTAINED BY CONTACTING BOB BOWER, THE ADVISING DIRECTOR AT THE TELEPHONE NUMBER BELOW.

Ref: 539/2

HUTTON EXECUTIVE SELECTION LTD.  
HUTTON HOUSE,  
HUTTON STREET, LONDON EC4Y 8HR.

TELEPHONE: 01-353 7141 (24 HOURS)

**Hutton**  
SPECIALIST RECRUITMENT CONSULTANTS



**Assembler  
Programmer**  
Up to £5000 p.a.  
Chester

Our Systems Implementation and Support Group, which is responsible for the implementation of new systems and the maintenance of existing systems, has vacancies for programmers with at least 18 months' experience of I.B.M. Assembler preferably under O.S. We can offer a competitive salary based on experience, an attractive relocation package and a flexible working hours scheme which allows compensatory days off to be taken in lieu of excess hours.

Application forms are obtainable from:  
Systems Control Section  
Computing Services Division  
Cheshire County Council  
County Hall, Chester  
or ring Sue Wade on Chester 802138.

**FREELANCE DATAPoint  
ANALYST/  
PROGRAMMER**

Wanted for development work, minimum 4 months in Swindon. 6800s, 5600s, ARC Network.

Ring Allan Martin

**Raychem**  
0793-28171

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AND  
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As specialist agents in the Engineering, Scientific and Technical industry, we now deal with over 4,000 Companies throughout the U.K. There is an urgent demand from these companies for experienced and Graduate programmers with FORTRAN experience. Jobs from £2,500 to £8,000 p.a. all areas. Phone us now for a free leaflet or contact us.

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Telephone: 01-637 5591 (day) — 01-636 9958 (even.)

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Banco Espanol en Londres S.A. operate twin real-time NCR 8200's, planned to give an on-line enquiry and data entry service to the Bank's five British branches.

Further development includes Management Information systems using database techniques.

A minimum of one year's experience on the NCR B1 operating system, plus the enthusiasm to get involved with practical expansion plans, are the main criteria for this two shift position.

Remuneration includes bonus and shift allowance. Additional benefits are:

FREE pension and life assurance, L.V.'s etc.

If you want to make your mark in a growing installation, contact Les King or Sylvia Lyons up to 8.00 p.m.

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PORTSMOUTH POLYTECHNIC  
Computing Centre

**Senior Systems  
Programmer**

Post 772

Salary up to £6,500

The centre seeks to recruit a person to lead a small enthusiastic systems team engaged in a wide variety of systems design and maintenance projects. The main user service is supplied by an ICL 2960 mainframe running currently under VME/B together with an ICL 2904 machine using MINIMAC and a switchable terminal network is now being connected in order to expand the user service. Additional commitments of the team include work on a PDP11/40 using RSX/M and some microprocessor research applications in association with academic staff. Applicants should preferably be graduates with some considerable experience on the new range of ICL machines, although these conditions are not exclusive.

Application forms are available from: Staff Office, Portsmouth Polytechnic, Alexandra House, Museum Road, Portsmouth; or by telephoning Portsmouth 27881, ext. 317, and returned as soon as possible.

**BUSINESS  
SYSTEMS ANALYST**

Required for an established fast growing subsidiary of a large American Corporation. Essential requirements are for a good knowledge of Basic or similar programming language, knowledge of the Scandinavian market is essential. The ability to think on your feet and be willing to travel are essential. The salary will be £6,000 p.a. + company car + bonus.

Please telephone Mr. B. Moore 01-878 7261 for an application form.

**SYSTEMS ANALYSTS  
AND PROGRAMMERS**

Holland

AI NEG.

Our clients, an expanding software/services organisation, requires Analysts and Programmers with experience of COBOL/PL1 and IMS to develop a variety of database applications on IBM Mainframe machines. Initial interviews will be held in London during April.

Ref: 13/1

**TECHNICAL  
ANALYST/PROGRAMMERS**  
London based £7,000+

Our Clients, a consultancy in advanced software on minis and micros, requires Analyst/Programmers of 3 years + technical programming, in Assembler or machine code. The company offer excellent opportunities for ambitious professionals to develop applications at the forefront of computer technology.

Ref: 13/2

**ANALYSTS AND PROGRAMMERS**  
London to £8,500

An international insurance company seeks D.P. professionals to develop insurance/financial applications. Ideally programmers should have 2+ years' experience of COBOL/ASSEMBLER under DOS/VS with CICS. The Analyst will be expected to have a minimum of 3 years' D.P. experience.

Ref: 13/3

**PROJECT LEADERS /  
PROGRAMMERS**  
Essex to £8,000

Our clients, a manufacturing organisation, has recently installed a Honeywell 64 supporting On-Line and batch Systems. They urgently require all levels of D.P. staff from Programmers with 9 months' COBOL experience to Analyst/Project Leaders to develop commercial/manufacturing Systems.

Ref: 13/4

**ENGINEERING SUPPORT  
STAFF**

London

to £6,000+

Our Client, a leading Computer Services Organisation, urgently requires ambitious mainframe programmers with an engineering/scientific background and knowledge of FORTRAN, to provide technical support and advice to clients using their packages/bureau services in both time sharing and batch modes.

Ref: 13/5

**TRAINEE TECHNICAL  
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Middx.

to £4,000

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Ref: 13/6

**IBM ENGINEER**  
Bahrain to £12,000+ Tax Free

An international services organisation urgently seeks an experienced hardware engineer to provide support facilities to their clients, on IBM compatible equipment.

For the successful candidate, full training will be provided and the company offer an excellent remuneration package including free accommodation, five weeks leave, company car and bonus schemes.

Ref: 13/7

**ANALYST/PROGRAMMERS**  
London to £8,000

Our Client, an expanding U.K. Software House, offers excellent opportunities for COBOL Programmers with a minimum of 2 years' experience and some systems analysis to develop a variety of commercial and financial applications. Preference will be given to candidates with some experience on Burroughs machines, and the ability to work on their own initiative.

Ref: 13/8

**INFORMATIX UNITED KINGDOM AND OVERSEAS INDEX**

Haven Informatix Limited

24 Grays Inn Road London WC1X 8HR Telephone 01-831 6055 Telex 299539 HAVEN G

*Ref: 13/8*



## IBM ANALYST PROGRAMMERS OPERATORS

**£5,000-£8,000  
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We have two world-wide manufacturing clients who have requested us to aid in the recruitment of a team of DP professionals. Their configurations consist of IBM 370/158 under DOS/VS, MVS, OS/VS1/2 and there is a great deal of development and design of new systems planned within both companies. In addition to the generous remuneration in the scales above, there are many further attractive benefits.

For information on any of the above vacancies or for enquiries regarding future Contract or Permanent positions:

Please contact Alan Brooker for further details on:

**01-637-5001**

## CONTRACTS U.K. AND OVERSEAS

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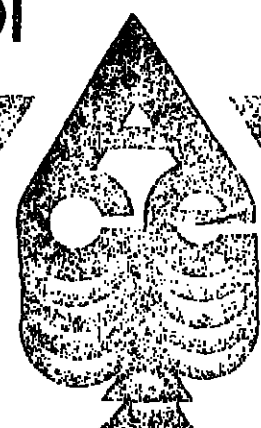
ICL 1900 Cobol GII/III Programmers  
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ICL 2960 SCL Programmers  
ICL 1900 Cobol GIII Programmers

The above are just a few examples of contracts most of which are immediate starts, that we have currently on our register. We have many, many more, so if you are currently a CONTRACT PROGRAMMER or ANALYST, or are at present in permanent employ, but are considering CONTRACT work, please do not hesitate to contact us immediately.

## Accord Computer Efficiency LTD

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4 Great Portland Street  
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Telex 261334 ACE UK

European Office  
Sarphatistraat 30  
1018GL Amsterdam  
Tel: 020 264664/264082  
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## Data Communications

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seeks outstanding long-term relation-  
for satisfying long-term communi-  
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tions, wonderfully control features. I  
and unrivalled control features. I  
will provide possible five figure in-  
come and car. Write or call.

INTERTEL communications equipment is probably the most advanced available anywhere for modems, and network control. An integrated range of devices, meets user needs from small single computer terminal systems to large complex networks with many distributed processors. No other products offer such powerful diagnostic and control facilities from a single site.

INTERTEL equipment is marketed in the UK by Data Logic's Communications Products Division. User reaction is enthusiastic and sales are rising fast. This is why we need experienced and energetic Sales Executives.

to develop the market further. Candidates should have experience of selling or supporting the sales of relevant data communications or terminal products. They must be knowledgeable about the rapidly changing field of data communications, highly self-sufficient, and mobile.

We offer an excellent basic salary together with commission which should take annual earnings to over £12,000. A car and competitive benefits will be provided.

Write or telephone, quoting reference CP/02: Kathy Martin, Data Logic Limited, 29 Marylebone Road, London NW1. Tel: 01-486 7288.

**Data  
Logic**

SOUTH-WEST  
THAMES REGIONAL  
HEALTH AUTHORITY

### INSTALLATION MANAGER

SALARY SCALE 18  
£8,448

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New post to monitor effective  
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Long-term contracts due to commence in May/June  
1979.

ASSEMBLER/ATLAS EXPERIENCE. MICRO-  
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Submit your particulars to:

Technic Recruitment Services Limited, 3  
Fairfield Avenue, Staines, Middlesex TW18  
4AB; or Telephone: STAINES 61337 for Ap-  
plication Form.

### COMPUTER SYSTEMS MANAGER

We're Midland Poultry Holdings Limited, one of the largest poultry rearing and processing companies in the U.K., and part of the Unilever Concern. Our headquarters is located in the centre of Shropshire — some of the finest country you'll ever find — but our operations are far from rustic, in fact we're implementing distributed computing, on-line programming and other concepts that others are still talking about. Now, to help us carry on, we're looking for a man or woman who will join our small, established and enthusiastic team as Computer Systems Manager. He/she will be responsible for the Computer Services Manager for systems analysts work and associated programming and will have total involvement in computing from our hardware to the interface with all our management team. Currently we are using a PDP 11 processor linked into an IBM mainframe, but our plans involve upgrading our processors to support over 20 users. Applicants for this post must therefore be experienced in IBM mainframe or mini computer programming and possess a sound knowledge of a high level programming language. But not just that — they should be able to carry a project through to conclusion and be keen and ambitious — the sort that will be looking towards significant promotion with us, or within the Unilever Concern, in a couple of years. On salary we are talking around £8,600 p.a. plus pension scheme incorporating first rate life insurance, B.U.P.A. and of course assistance with removal expenses. We may even be able to help with short-term housing while you look around. If you like the sound of us and are ready for the next step in your career send details of yourself to the quoting reference to:

John T. Bullock, Group Personnel Manager  
MIDLAND POULTRY HOLDINGS LTD  
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### COMPUTER ENGINEERS U.K. - O.S.

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